Vol. XXIV AUGUST 1930 No. 8

The EXCAVATING ENGINEER

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Jerry Gwin Organization Turns Out Remarkable Records on Texas Road Job.

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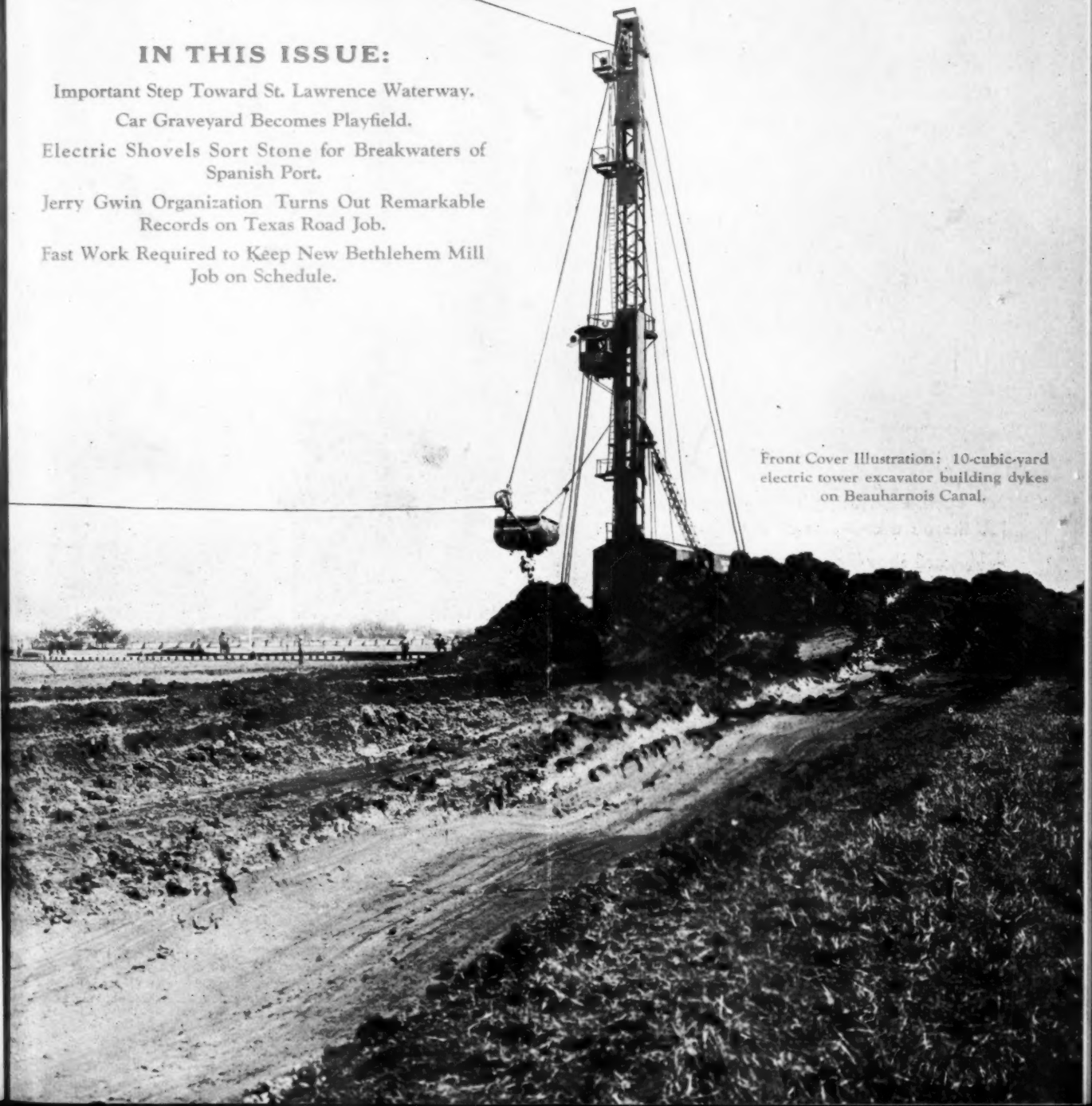
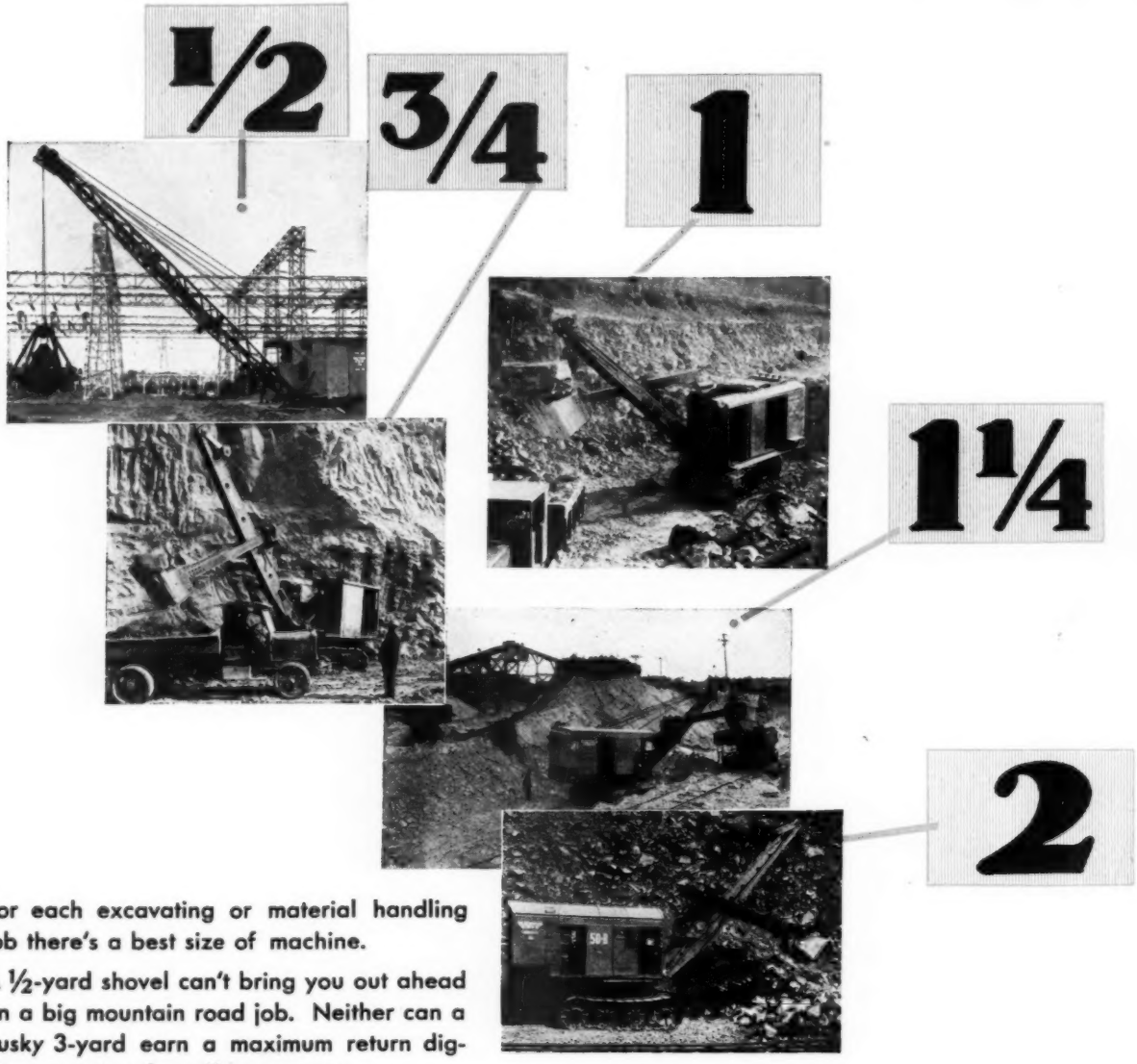


Front Cover Illustration: 10-cubic-yard electric tower excavator building dykes on Beauharnois Canal.

FOR EVERY JOB—A BUCYRUS-ERIE



For each excavating or material handling job there's a best size of machine.

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Whatever your present job, or your next one, remember—*for every job there's a Bucyrus-Erie.*

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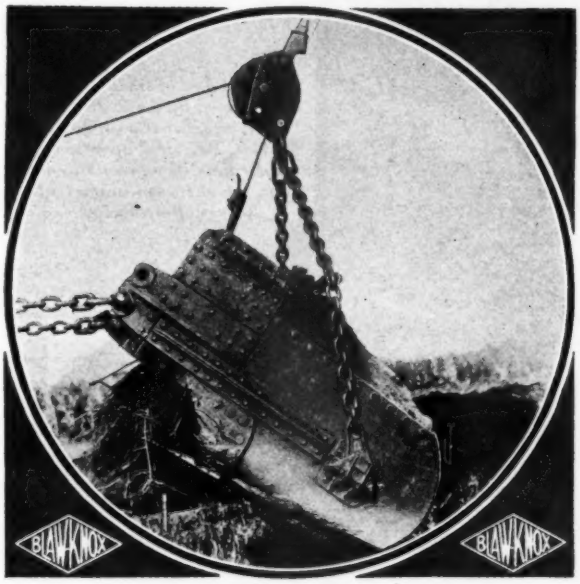

28 standard and many special sizes to give you the right one for your job. Light, medium and heavyweight designs—all sturdily built to anticipate the toughest jobs they may encounter. Teeth and lips are made from high quality manganese steel, highly resistant to abrasion—sidewalls are liberally reinforced and do not pull in. Consider the superior qualities of these buckets now—they have proved themselves wherever draglines are used. Ask for Catalog Form No. 1158.

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The Excavating Engineer

About Excavating Projects—By Excavating Men—For Excavating Men—The World Over

25 Cents Per Copy — One Dollar Per Year

Vol. 24 — AUGUST 1930 — No. 8

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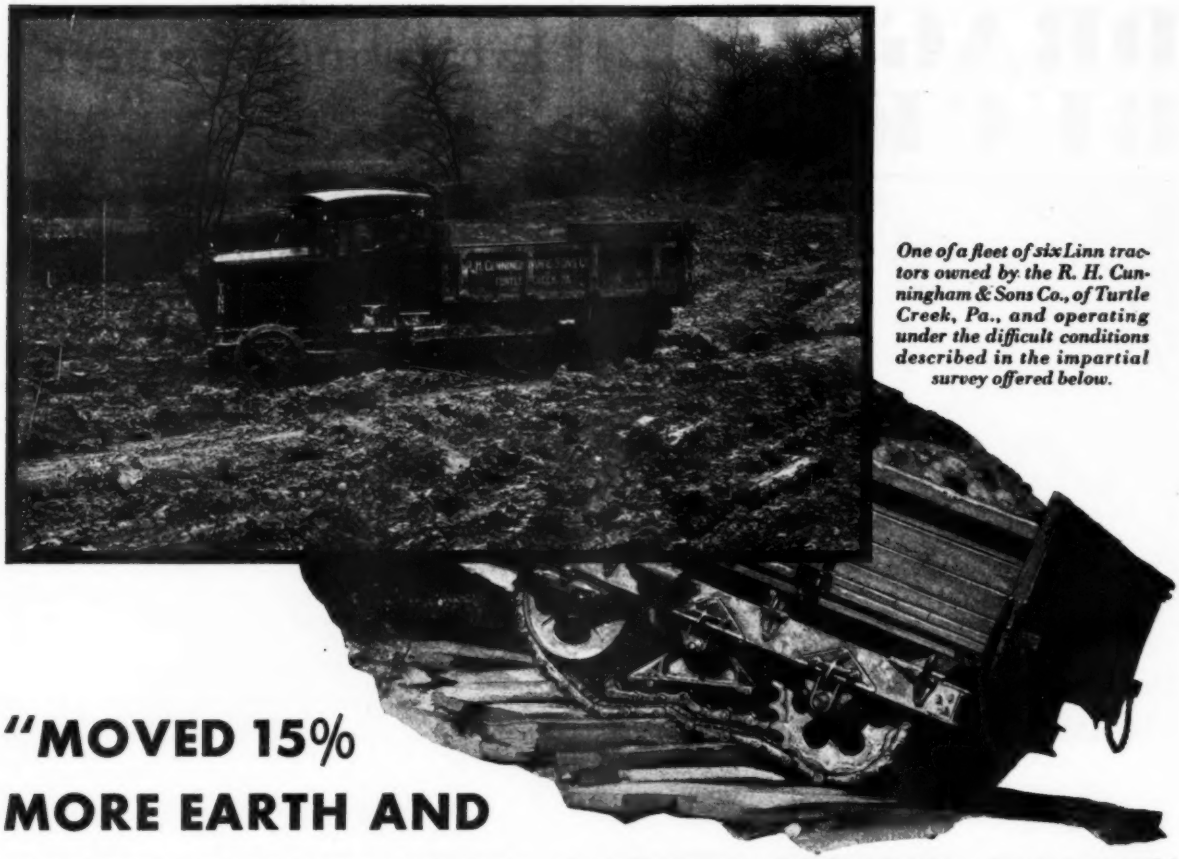
Certified Performance Survey 51-AZ Made by Independent Cost Engineers



One of a fleet of six Linn tractors owned by the R. H. Cunningham & Sons Co., of Turtle Creek, Pa., and operating under the difficult conditions described in the impartial survey offered below.

"MOVED 15% MORE EARTH AND SAVED ABOUT $800 DESPITE SPRING THAW"

"Linn tractors kept the job going without difficulty when the February thaw stopped other hauling equipment, thereby saving about $800 through avoiding interruptions of operations. And the total movement was 15% more than had previously been hauled under the best possible conditions."

These findings are from the unbiased report of A. C. Nielsen Co., engineers on a road construction job. These engineers found Linn tractors hauling capacity loads (ten tons) through deep muck and mire where no wheel could turn, each tractor making twenty-four 1600-foot round trips daily, at a total cost of .146 per net ton.

A complete copy of this independent survey is available to anyone interested in heavy hauling. With it will be sent other interesting and convincing data.

Patent No. 1,370,631
Patent No. 1,521,464
Patent No. 1,666,641
Patent No. 1,685,676
Patent No. 1,701,979
Other Patents Pending

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Wherever sure-footed power is needed, Cletracs provide the ideal units. Strong, rugged, capable, they offer exceptional advantages and economies. Built in a line of five units ranging from 20 to 100 h. p.

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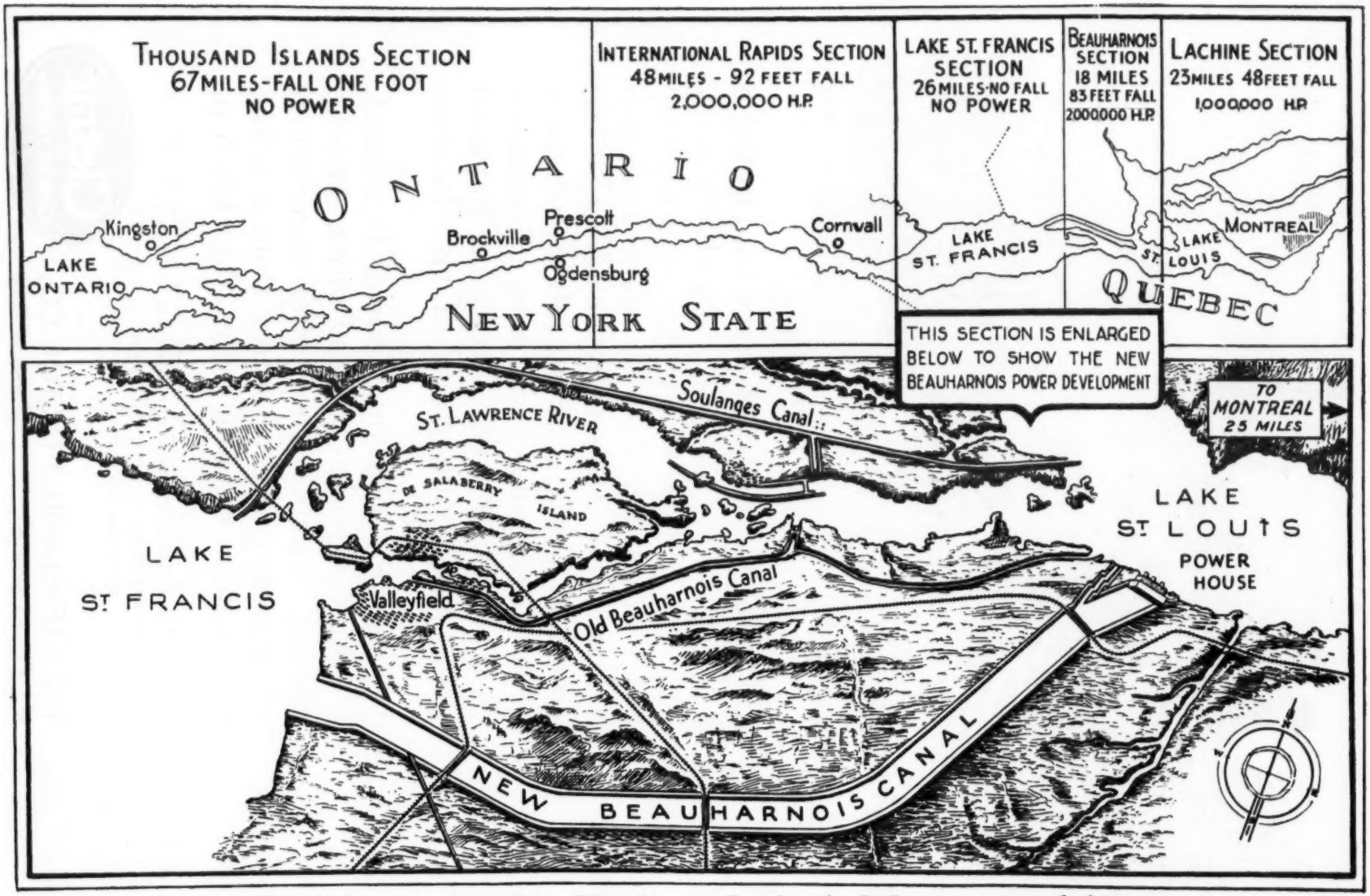

Sketch showing relationship of Beauharnois Canal to the St. Lawrence as a whole.

The EXCAVATING ENGINEER

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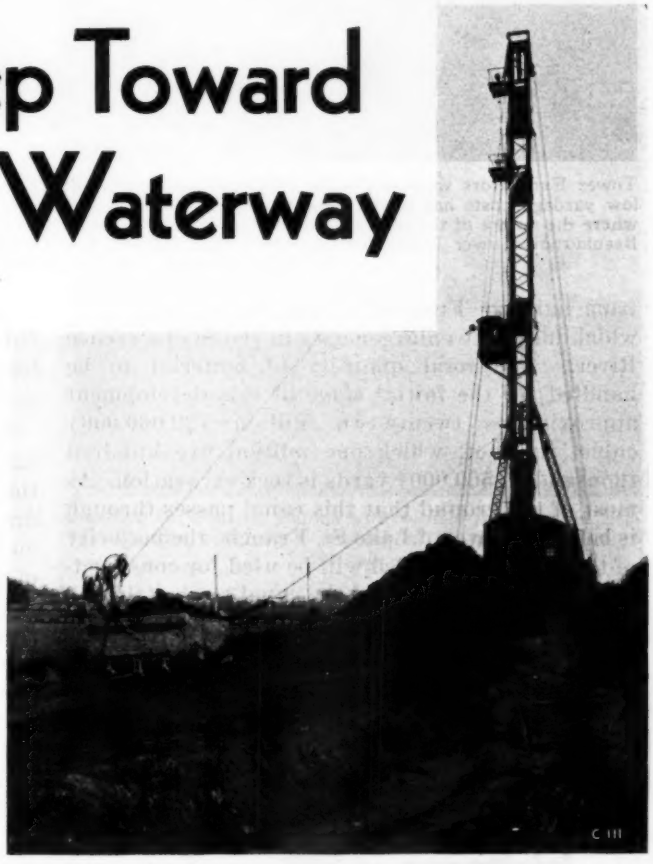
Important Step Toward St. Lawrence Waterway

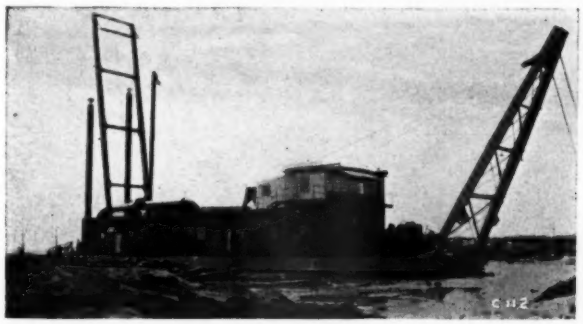
Beauharnois* Construction Company excavates 22,000,000 cubic yards from new Canadian Canal near Montreal to help bring ocean traffic to Great Lakes Ports.



Four of these giant 10-yard Bucyrus-Erie Tower Excavators handle the eight million cubic yards required to construct the dykes for eight miles of canal to the east.

AT Beauharnois, on the St. Lawrence River, in the Province of Quebec, is now being constructed a large hydro-electric and navigation development for the Beauharnois Light, Heat & Power Company. The work is being done by the Beauharnois Construction Company with F. H. Cothran, Vice-President, General Manager and Chief Engineer, in charge of construction operations.

This work embraces the providing of a deep waterway for the St. Lawrence River throughout the Soulanges Section of the river where there is an 80-foot fall in sixteen miles. One additional step towards provision for ocean-going traffic from the Atlantic Ocean to the Great Lakes points will thereby be provided.

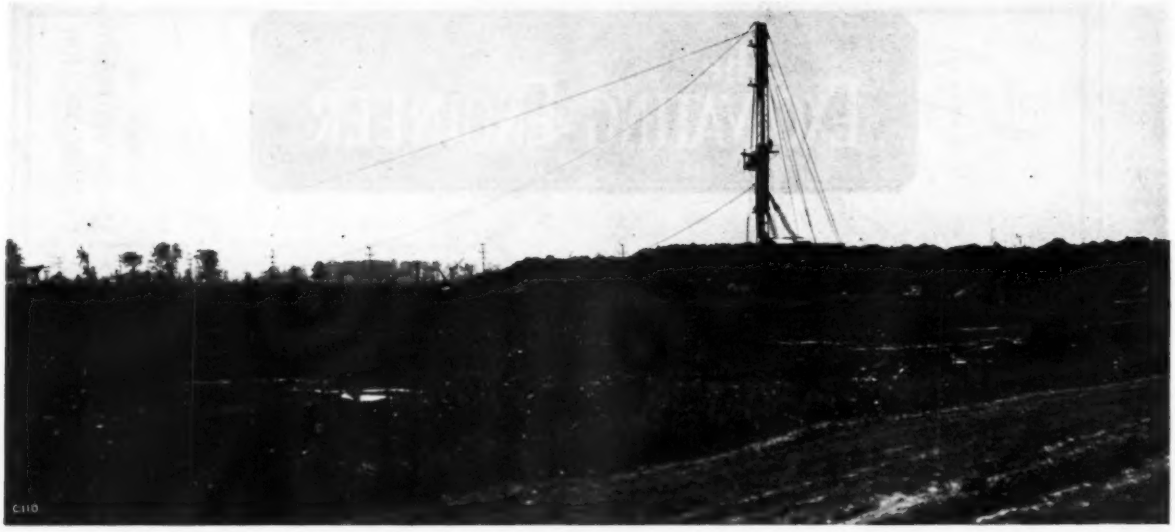


5 875,000 cubic yards of excavation will be handled by the R. O. Sweezey, Bucyrus-Erie hydraulic dredge.

Excavation for the Sixteen Miles of Canal Includes 1,500,000 Cubic Yards of Rock.

In order to develop an effective head of 84 feet, a canal, 16 miles in length, is being constructed

*Beauharnois — pronounced bo-ar-nwa'.

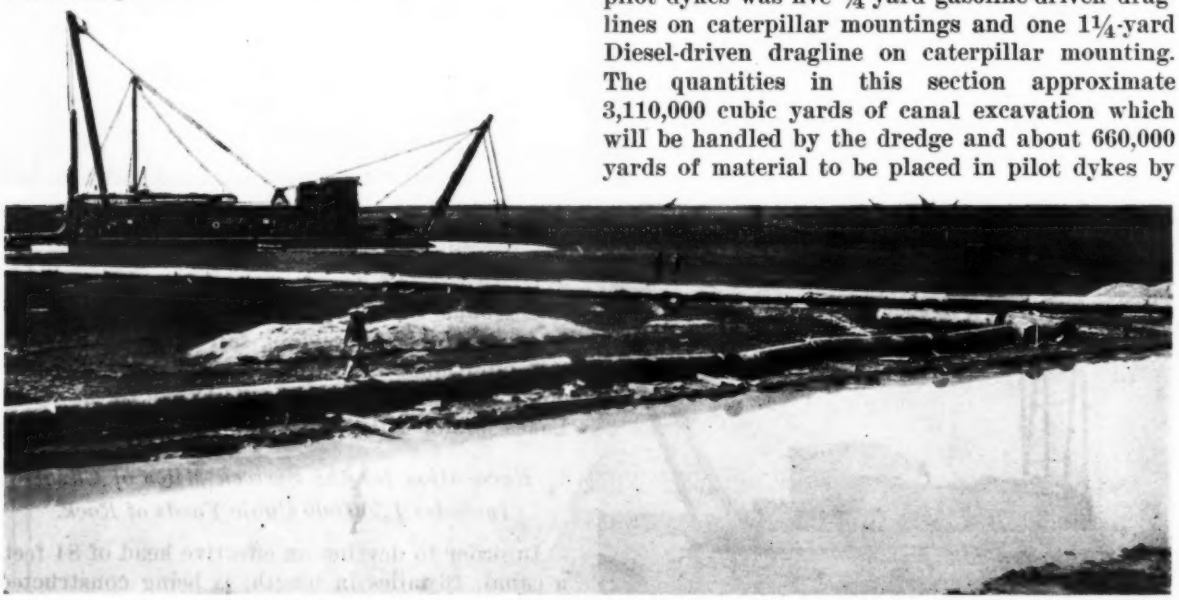


Tower Excavators were originally developed for levee building on the Mississippi. Their ability to move dirt at remarkably low yardage costs has made them applicable to other operations, such as stripping, canal excavation and dyke building, where the nature of the material and required cross section makes their use practical. The above view shows one of the Beauharnois Tower Excavators in action. The 130-foot head tower appears over the new dyke, while the huge 10-yard bucket cuts into the borrow excavation at the left.

from Lake St. Francis to Lake St. Louis, both of which lakes are enlargements in the St. Lawrence River. The total quantity of material to be handled for the initial stage of this development approximates twenty-two million (22,000,000) cubic yards of, which one million five hundred thousand (1,500,000) yards is rock excavation. As most of the ground that this canal passes through is below the level of Lake St. Francis, the majority of the material handled will be used for constructing dykes on each side of the canal so that the job is more of the nature of building up rather than excavating.

Three and One-half Miles of Clay at West End Handled by Hydraulic Dredge and Small Draglines. Dredge Moves Approximately Million Yards from April 15th to June 21st.

The first three and one-half miles of canal lies in Lida or Marine clay. The excavation in this section is being handled by a 26-inch electric hydraulic dredge. During the later part of the summer of 1928 pilot dykes were begun on each side of the canal for the purpose of forming disposal basins to hold the material pumped out by the dredge. The equipment used in constructing these pilot dykes was five ¾-yard gasoline-driven draglines on caterpillar mountings and one 1¼-yard Diesel-driven dragline on caterpillar mounting. The quantities in this section approximate 3,110,000 cubic yards of canal excavation which will be handled by the dredge and about 660,000 yards of material to be placed in pilot dykes by



This Bucyrus-Erie dredge R. O. Sweezey has a 2200 horsepower pump motor, a 300 horsepower cutter motor, 26-inch pump, 28-inch suction and 26-inch discharge. It is powered with Canadian General Electric equipment.

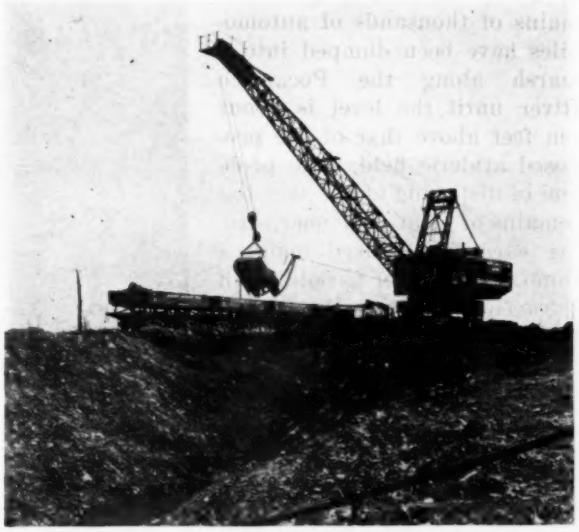
the small draglines. The dykes in this section will be rip-rapped with gravel placed by means of train fill to the extent of approximately 192,000 cubic yards. The suction dredge was erected by the construction company during the first part of the year 1930 and commenced operations about the 15th of April; to date (June 21st) it has moved approximately 1,000,000 cubic yards with a maximum daily output of 40,000 cubic yards during an actual working time of 21 hours. The small draglines have completed about 240,000 cubic yards of their work in this section.

Following the first clay section of the canal comes a section of approximately one mile and a half in length where the material is boulders, gravel and clay which is not suitable for excavation by a suction dredge, and this material is being moved by means of two 4-cubic-yard electric draglines. The quantity to be handled by these draglines amounts to approximately 2,214,000 yards of canal excavation, of which about 100,000 cubic yards has been excavated to date by one dragline, and the second dragline will be in operation shortly. The material taken from the canal in this section is used for rip-rapping the dykes in the first section, and will be used for making railway diversion fills and other purposes, but at present the only disposal source available is as rip-rap and the output to date has been limited to a certain extent by the condition of the dykes from which the rip-rapping is being done by means of train fill.

Below this section of the canal comes another four-mile length of Marine clay which will be handled next summer by the hydraulic dredge. Here the quantity of canal excavation to be handled by the dredge amounts to 2,765,000 cubic yards, with about 741,000 yards of pilot dyke and dyke structure to be handled by six small draglines. Rip-rap to the extent of 116,000 yards obtained from the dragline section of the canal will be placed on faces of dykes in this and in the above section.

Eight Miles of Canal to Be Inclosed in Dykes 28 Feet High with Top Width of 40 Feet.

There follows a section of the canal some 8 miles in length until the Power House is reached, and in this section no canal excavation will be necessary, however, some 8,000,000 of yards will be required for dykes, which will be faced with approximately 800,000 yards of rock rip-rap to be obtained from



Loading to Western Dumps with 4-cubic-yard Marion electric dragline which is excavating in the gravel section of the canal.

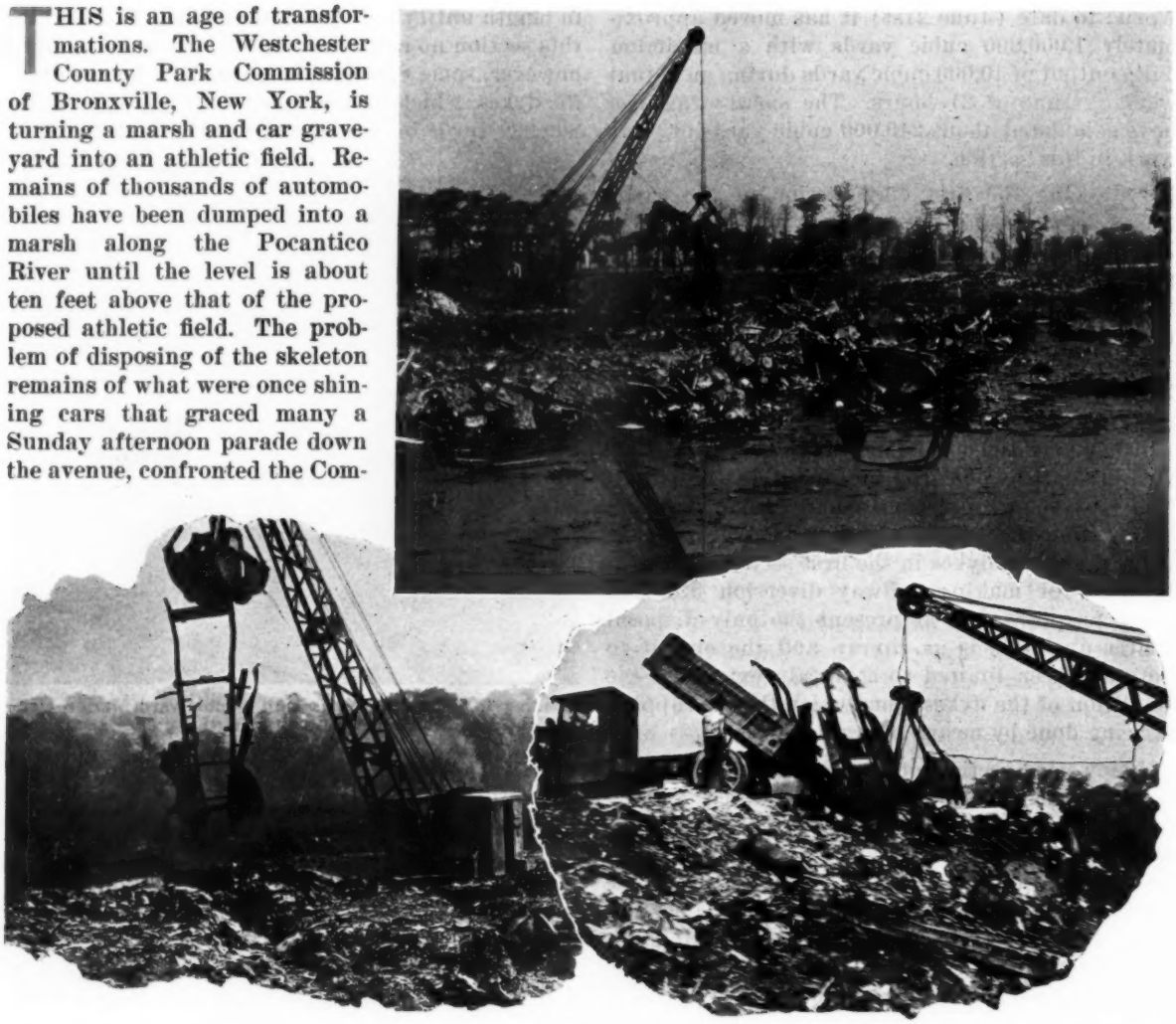
the tail-race excavation. The dykes in this area aggregate some 28 feet in height, have a top width of 40 feet, and are being built on a 3 to 1 slope with a clay core. Four 10-cubic-yard electric tower excavators are being used to construct these dykes. The tower excavators, a new type of equipment, consists in the main, of a head tower, 130 feet in height on caterpillar mounting, and a short

(Continued on page 414.)

This Dredge is excavating from the canal and pumping into a disposal basin at the North Dyke. In the background on the horizon may be seen small draglines building pilot dykes for the construction of the South Dyke.

Car Graveyard Becomes Playfield

THIS is an age of transformations. The Westchester County Park Commission of Bronxville, New York, is turning a marsh and car graveyard into an athletic field. Remains of thousands of automobiles have been dumped into a marsh along the Pocantico River until the level is about ten feet above that of the proposed athletic field. The problem of disposing of the skeleton remains of what were once shining cars that graced many a Sunday afternoon parade down the avenue, confronted the Commission — a Bucyrus-Erie Type D-2 dragline and clamshell proved the solution.



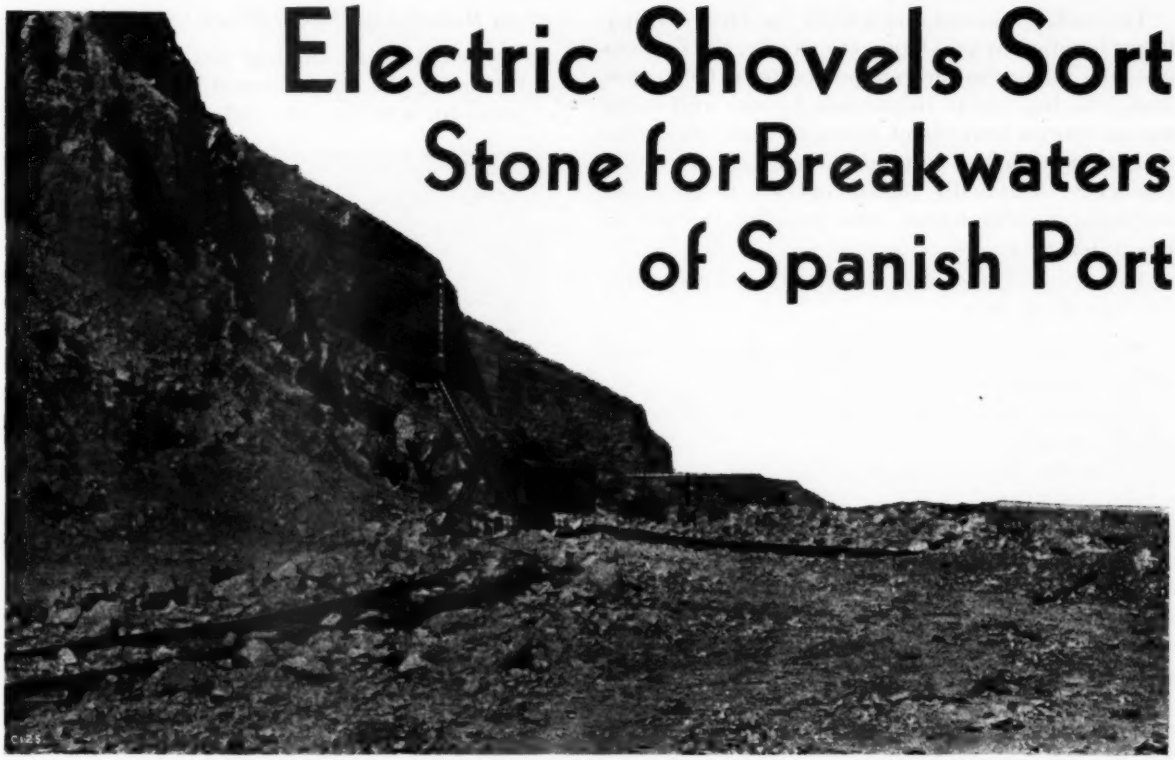
Desolate and depressing are the junk heaps where all good automobiles go when they die. These pictures tell the story of how Westchester County Park Commission is changing the dump at Kingsland Point into a beautiful athletic park.

A trench about 2500 feet long skirting the dump is being excavated, which will be the final resting place of all the old wrecks. This wide, deep trench is dug by the Diesel with dragline equipment in order to secure material for raising the surface of the adjoining cat-tail swamp three to four feet in addition to providing a place for disposing of the rubbish, empty drums, iron beds, and old autos. The dragline digs a 500-foot section; then turns around and working as a clamshell fills the big ditch level with junk over which fresh dirt is spread. No labor is required for chaining or otherwise attaching to the clamshell.

The completed park system in Westchester County includes more than 17,000 acres of land and 160 miles of parkways.

Jay Downer is Chief Engineer for the Westchester County Park Commission, L. G. Holleran is Deputy Chief Engineer in charge of all engineering and construction operations. L. R. Stuffler is Superintendent of Construction, and W. R. McLaughlin is Master Mechanic.

Electric Shovels Sort Stone for Breakwaters of Spanish Port



Looking along the quarry face from which is to come the hard, white sandstone that goes in the new Alicante breakwater. Two Bucyrus-Erie 50-B electrics may be seen waiting for cars along the toe of the blasted stone.

Mountain quarry yields million and half tons sized stone for Alicante Port development.

INTO the sparkling blue waters of the Mediterranean, Obras del Puerto de Alicante is piling thousands of tons of rock each day in the extensive improvements to this important Spanish port. Alicante, located on the southeastern coast, is a most interesting old town, dating back to early Roman times.

Through the courtesy of Sr. Sanchez Guerra we recently had the opportunity of spending a most enjoyable afternoon studying the interesting operations at the mountain quarry supplying the required stone for the extended breakwaters.

Some million and one-half tons of rock are required in their construction. For this work the Spanish P. W. D. granted about eight million pesetas (approximately one million dollars). It was planned to have the work done by contractors, but owing to the special conditions required for the work this was found impractical, and Sr. Guerra, who is manager and Chief Engineer of the Obras del Puerto de Alicante, decided they would undertake the work. Therefore they are quarrying their own rock and, under the able direction of Sr. Guerra, they are certainly making an unqualified success of it.

Necessary Classification of the Rock Into Graded Sizes Complicates the Operation.

The quarry formation is a very hard, white sandstone with a density of from 2 to 2.5. The cut has been opened into the mountainside to a depth of some 50 meters (164 feet).

Looking out over the sparkling blue Mediterranean from avenue of date palms at Alicante Port.

The rock is blasted down from the face, drilling being handled by jackhammers chiefly, the drillers working along the face supported by safety ropes from the top. It is impossible to use well-drills and pull down heavy bank shots, because the mountain formation has left an exceedingly irregular top where well-drills cannot operate to good advantage. Nearby houses also prohibit the use of heavy blasting.

The original idea was to classify the rock into the following sizes:

Pieces having average weight of 4,000 kilograms (8,818 pounds).

Pieces having average weight of 3,000 kilograms (6,614 pounds).

Pieces having average weight of 1,500 kilograms (3,307 pounds).

Pieces having average weight of 750 kilograms (1,654 pounds).

Pieces having average weight of 250 kilograms (551 pounds).

This in actual practice has been modified and they now make the following classification only:

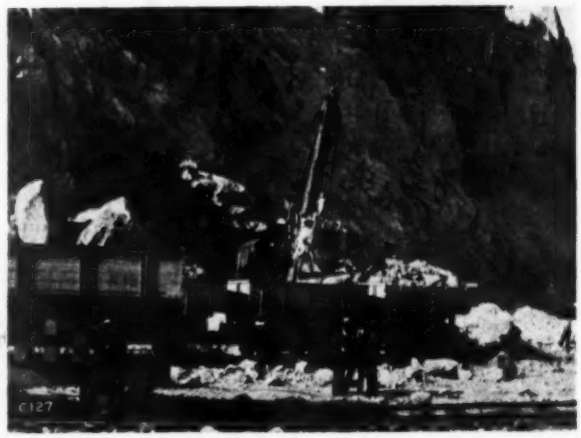
25% 3500 to 8000 kilograms (7,716 to 17,636 pounds).

25% 500 to 3,500 kilograms (1,102 to 7,716 pounds).

50% quarry run passes through the dipper.

Sorting Handled by 2-yard Ward-Leonard Shovels

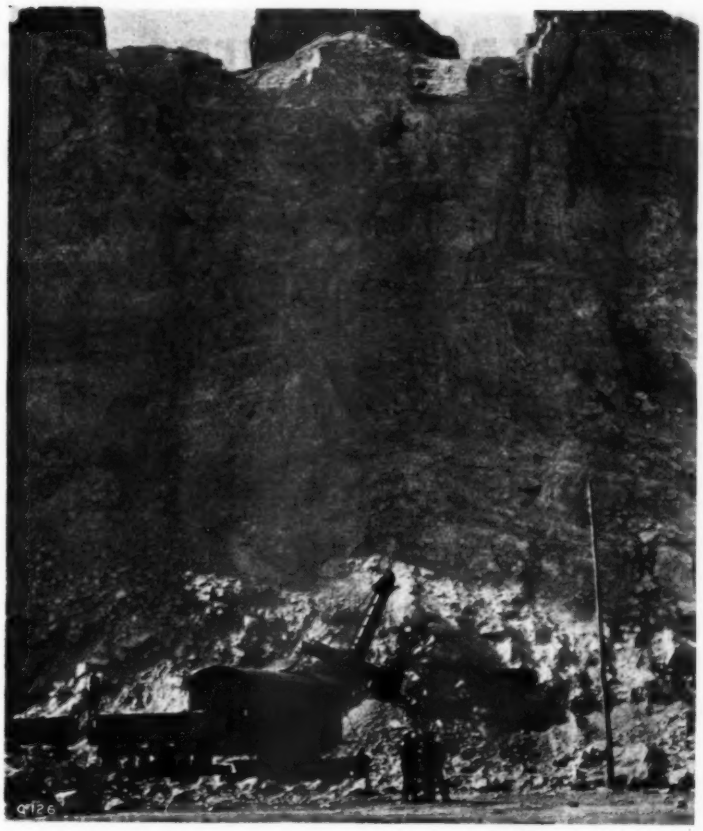
In accordance with the best modern practice, instead of using the old-fashioned method of cranes and trays for handling the different sizes of rock,



In sorting, medium size rock is chained over the dipper teeth; the larger sizes are chained from the casting at the back of the dipper.

all the classification is done by electric shovels. The rock is all loaded direct from the foot of the face, and for this they purchased originally two 50-B Bucyrus-Erie Ward-Leonard electric 2-cubic-yard shovels. Later, owing to the very satisfactory performance of the first two machines, a third 50-B machine was ordered and placed in service.

One of the Bucyrus-Erie 50-B Ward-Leonard electric shovels sorting and loading large size rock into the cars which carry the stone out to be dumped into the Mediterranean.



Towering 146 feet high, this face is drilled with jackhammers by men supported from the top by safety ropes.

The rock is all loaded into 10 cubic metre (13.08 cubic yard) cars, which were built locally. These cars are side dump, wooden cars running on standard-gauge track and hold, when piled up, about 15 or 16 tons. The haul to the port is on the average only 700 metres and the cars are dumped directly into the sea.

The large rocks are handled by means of chain slings hung from the dipper-handle end-casting immediately behind the dipper. Smaller rocks are handled by chains slung from the dipper teeth. The chain slings are hooked up around the rocks in such a manner that when the rock is lowered on to the car, the chain, as it is lowered down, automatically unhooks itself.

From two to three men are employed in attaching the chain slings to the pieces of rock in the pile, and occasionally one man is required to handle the rock on the cars.

The shovels have proved that they are entirely capable of dealing with this work, and the flexibility of the Ward-Leonard equipment is invaluable in the delicate maneuvering necessary in handling rocks up to eight tons in size, and in selecting the material from the piles of miscellaneous sizes of rock. This is very gratifying to the Obras del Puerto authorities, because originally there was some doubt as to whether it would not be necessary to use cranes as well as the shovels. Results have shown that these modern Ward-Leonard shovels with their flexibility and accurate control are the proper machines to use for this work, and that cranes are quite unnecessary.

Each Shovel Now Sorting and Loading 28,000 Tons per Month

With regard to the output of rock from the quarry, owing to the classification, it is, of course, low in comparison to what the machines are capable of when in straight rock loading. In the first twelve months with two machines working only about 10 hours a day they loaded out 200,000 tons of rock. In this period, of course, they were getting used to the new machines and getting the whole job organized. At the present time they are getting 28,000 tons of rock per month per machine working ten hours per day.

To show what the machines are capable of when they have a chance to keep the machine loading the rock which will pass through the dipper without classifying they have obtained 1,250 tons from one machine in eleven hours. When visited, the machines were doing a complete digging cycle, swinging through 180 degrees from dig to dump and back again in 22 to 24 seconds.

Who Am I?

I am more powerful than the combined armies of the world.

I have destroyed more men than all wars of the nation.

I am more deadly than bullets. I have wrecked more homes than the mightiest machine guns.

I steal in the United States alone over $300,000,000 each year.

I spare no one. I find my victims among the rich and poor alike, the strong and weak, widows and orphans know me.

I loom up in such proportions, that I cast my shadow over every field of labor from the turning of the grindstone to the moving of every railroad train.

I massacre thousands upon thousands of wage earners within a year.

I lurk in unseen places. I do most of my work silently. You are warned against me but you heed not. I am relentless. I am everywhere — in the home, on the streets, in the factory, at railroad crossings and on the sea.

I bring sickness, degradation and death, yet few seek to avoid me.

I destroy, crush or maim; I give nothing but take all.

I am carelessness.

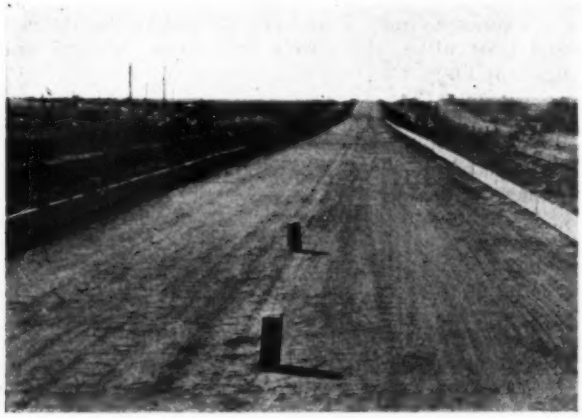
Jerry Gwin organization turns out remarkable records on Texas road job

CONTRACTOR Jerry Gwin, with head office in the Comer Building at Birmingham, Alabama, secured a contract last fall for graveling forty-five miles on Texas State Highway 84-A in Kent County. The work extends from the south county line near Adair to twenty miles above Clairmont and totals approximately 150,000 cubic yards. The work is in a very isolated part of the country, being twenty-four miles from a railroad at the nearest point, and with drinking water 42 miles away. For radiators of shovel, tractors, trucks, etc., suitable water was found at a well about 12 miles from the job.

The Bucyrus-Erie Gas + Air poses for her picture. Operator Bob King stands on the running board beside his levers. Mr. Gwin tells us that Operator King and this Gas + Air loaded a total of 5960 cubic yards in a period of three consecutive days.

That gives some idea of conditions, though we should add that sandstorms are frequent in that section and it is always dry and dusty. At the time of writing (April) they have had no rain since last November.

And it's out in this young Texas desert that Jerry Gwin's outfit has been plugging along all winter and setting up some records that any of the boys can be proud to write home about. The contract calls for completion in 200 working days. With 85 working days gone, the job is 85% complete. On the present schedule it will be finished in 100 days — half the time specified.



Here is the grade already for the gravel.

Last fall Mr. Gwin moved in a new Bucyrus-Erie Gas + Air, with 1¼-yard bucket to handle the job. In the first 85 working days this machine has averaged 1200 cubic yards per day loading to four-yard International trucks. The highest day's run was 2240 cubic yards and 5960 cubic yards was loaded in a period of three consecutive days. In pockets of loose gravel the shovel has been able to maintain an output of 200 yards per hour. The gravel lays in small pockety formations covered up with cemented gravel, which has to be cast aside, so that the machine has to handle slightly more yardage than the amount required to surface the road. Quite often there are only 1800 to 2000 yards in a pit, and when this is cleaned up a move must be made and another pit stripped and opened. The sturdy caterpillar mountings under the Gas + Air have already travelled over 100 miles in the first 85 days and will move another 35 before completing the job and getting back to the railroad.

4-yard Internationals dump the gravel to the prepared road grade where it is quickly leveled off with hand shovels. Messrs. Gwin, Jr., and Shepherd, Jr., are standing beside the Ford Coupe in the lower picture.

Two 10-ton Caterpillar Tractors with one 12-foot Russell blade and one 12-foot Austin-Western blade are handling the grading.

(Continued on page 393.)

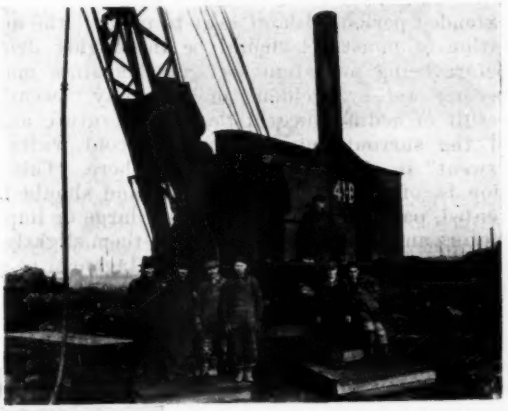
Fast Work Required to keep New Bethlehem mill job on schedule

Pile driving of Horton outfit feature of this Cowper job.

THE Bethlehem Steel Company is erecting a new plant at Lackawanna, New York, which will be one of the newest and latest type of bar mills in this country. The general contractor for the job is the John W. Cowper Construction Company of Buffalo, New York.

Besides approximately 85,000 yards of excavation and 100,000 yards of backfill required, the work includes 40,000 yards of concrete and a large amount of piling. C. A. Smith is the Superintendent in charge for the John W. Cowper Company, supported by C. S. Siegfried, the engineer. The Cowper Company has their own Bucyrus-Erie Type B shovel on the job, Stapell, Mumm & Beal's B-2 Bucyrus-Erie, Vincent Schiavi's Northwest as a dragline, Mike Dailey's Osgood, besides the D. E. Horton Construction Company's four Bucyrus-Eries.

The latter company, which has headquarters in Buffalo, subbed the pile-driving contract. Don Moss superintended pile-driving operations, with the assistance of Hank Weller and Jack Newman as driver foremen. A total of 19,000 piles ranging in length from 20 to 45 feet were driven. The Horton Company used four Bucyrus-Eries for handling this pile-driving: a 41-B, Jack Harley, engineer; a B-2, Tom Naughton, engineer; a Type B, Frank Shaffer, engineer; and a Type 1030 operated by Walt Schneider. The latter was used to unload and stack the piling.



Above — Here is the crew of the Bucyrus-Erie 41-B who drove 126 piles in eight hours. Left — General view of the job showing the B-2 which drove 96 piles in eight hours.

Below—Here we see the Horton Bucyrus-Erie Type 1020 taking care of the unloading, stock piling and reloading for delivery to the hammers.

In the record day the Bucyrus-Erie 41-B with a McKiernan-Terry hammer on 56-foot leads drove 126 piles in eight hours or not quite one every four minutes. The Type B-2 carried a 3-ton Vulcan hammer on a 55-foot boom, and their record for the day was 96 piles in eight hours.

The Raymond Pile Company was also on the job, driving approximately 900 composite pile.

Although the job has been going on for a period of approximately nine months through a good bit of adverse weather encountered during the winter months, work on the new plant has been kept right up to schedule.

FIELD NOTES

The Care of Motor and Generator Insulation

One of a series of articles on the care of electrical equipment on excavating machinery. The first, on the care of bearings, appeared in the December issue.

The following instructions regarding the care and maintenance of motor and generator insulation are of the utmost importance, and should be followed very carefully in order to obtain the best results and continuous service from your machine.

It can be said of almost any machine that there is some one feature of its maintenance that has more to do with its successful performance than all the others. In the care of the electric motor and generator, the feature having the greatest influence on its operation, life and general well-being is the care given its insulation.

Motors and generators that have been long in transit in moist atmosphere, or have *been idle* for an extended period without heat to prevent the accumulation of moisture, should be thoroughly dried out before being placed in service. Machines may also become wet by accident, or they may "sweat" as a result of a difference in their temperature and that of the surrounding air, just as cold water pipes "sweat" in a warm humid atmosphere. This condition is, of course, very injurious and should be prevented, particularly in the case of large or important motors and generators, by keeping them slightly warm at all times. Current at a low voltage can be passed through the windings, electric heaters can be used, or even steam pipes may be utilized for protective purposes. In the case of extended idle periods, tarpaulins may be stretched over the motor or generator, and a small heater put inside to maintain the proper temperature.

Inspect Equipment Frequently

A systematic and periodic inspection of motors and generators is necessary to insure best operation. Of course, some machines are installed where conditions are ideal, where dust, dirt and moisture are not present to an appreciable degree; but most motors are located where some sort of dirt accumulates in the windings, lowering the insulation resistance and cutting down creepage distances. Quarry or coal dusts are highly abrasive, and actually cut the insulation in being carried through by the ventilating air. Hence the desirability of cleaning the motors and generators periodically. If conditions are extremely severe, open motors and generators might require a certain amount of cleaning each day. For less severe conditions weekly inspection and partial cleaning is desirable. Most machines require a complete overhauling and thorough cleaning about once a year.

For the weekly cleaning the motor or generator should be blown out, using moderate pressure, dry, compressed air (of about 25 to 30 pounds per square inch pressure). Where conducting and abrasive dusts are present, even lower pressure may be necessary, and suction is to be preferred, as damage can easily be caused by blowing the dust and metal chips into the insulation. On most DC motors and generators and large AC motors and generators windings are usually fairly accessible, and the air can be properly directed to prevent such damage.

Annual Complete Overhauling Advisable

About once a year, or more often if conditions warrant, motors and generators should be overhauled. Smaller motors and generators, the windings of which are not particularly accessible, should be taken apart.

First, the heavy dirt and grease should be removed with a heavy, stiff brush, wooden or fiber scrapers and clothes. Rifle-cleaning bristle brushes can be used in the air ducts. Dry dust and dirt may be blown off, using dry compressed air of 25 to 30 pounds pressure, taking care to blow the dirt out from the winding. As stated before, if the dirt and dust is metallic, conducting or *abrasive* air pressure may drive the material into the insulation and damage it. Hence, for such conditions, pressure is not so satisfactory as a suction system. If compressed air at low pressure is used, care must be taken to properly direct it so that the dust will not cause damage and will not be pocketed in the various corners.

Grease, oil and sticky dirt are easily removed by applying cleaning liquids like carbon tetrachloride (Pyrene, Carbona). This liquid evaporates quickly, and, if not applied too generously, will not soak or injure the insulation. Carbon tetrachloride is best, and is recommended because it is non-inflammable.

Liquid Cleaners Found Efficient

In case other liquids must be used, they should be applied out-of-doors or in a well-ventilated room. In using carbon tetrachloride the explosion hazard is *eliminated,* but some ventilation is required to remove the vapor, which might affect the safety and comfort of the workmen.

There are several good methods of applying the cleansing liquid. A cloth, saturated in the liquid, may be used to wipe the coils. A paint brush, dipped in carbon tetrachloride, is handy to get into corners and crevices, and between small coils. Care should be taken not to soak the insulation, as would be the case if coils or small machines were dipped into the liquid.

Probably the best method of applying the liquid is to spray it on. A spray gun, paint-spraying appliance, or an ordinary blow torch, are often used with good results, although the latter device is apt to give a heavier spray than desirable.

An atomizer will give excellent results, using a pressure of about 80 pounds if the insulation is in good condition, or 40 to 50 pounds if the insulation is old. The atomizer should be held not more than 5 or 6 inches away from the coils. While the insulation will dry quickly at ordinary room temperature after such cleaning methods, it is highly desirable to heat it to drive off all moisture before applying varnish.

Insulating Varnish Should Be Used

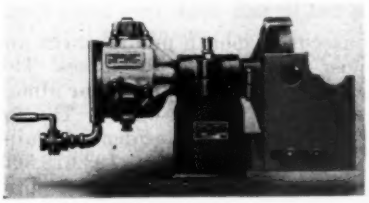
If the motor or generator can be spared from service long enough, the insulation should be dried out by heating to from 90 to 100 degrees centigrade. While warm, a high-grade insulating varnish should

(Continued on page 393.)

EQUIPMENT YOU OUGHT TO KNOW ABOUT

Air-Driven Bench-Type Pedestal Grinder

An improved bench-type pedestal grinder, Type 9, which can be bolted to a bench or a portable air compressor was recently introduced by *Ingersoll-Rand Co., 11 Broadway, New York City.* On contract work, a grinder of this type proves a very handy machine for grinding or sharpening chisels and picks, squaring up drill steel shanks, and taking care of the miscellaneous grinding jobs that are usually encountered. Considerable time can often be saved by having a grinder right on the job to do these tasks as need arises.



The machine has a free speed of 3,000 r.p.m. and is designed to take a virtrified grinding wheel 6-inch to 8-inch diameter with a ½-inch face. At the end of the grinder spindle, a bit chuck is screwed to take a drill or reamer with ½-inch straight shank. The motor, which is of rugged design, has three cylinders, spaced about the center line of the spindle. All deliver power to one crank pin. The three cylinders are interchangeable. The motor operates in a bath of lubricant, so that all moving parts are continuously immersed. The flow of air to the motor is controlled by a hand-operated globe valve, and the exhaust is directed through the base of the machine — a feature which prevents the grindings from being blown into the face of the operator. A steady-rest in front of the wheel aids the operator in holding the work. When writing to *Ingersoll-Rand Co.* for further information please mention this magazine.

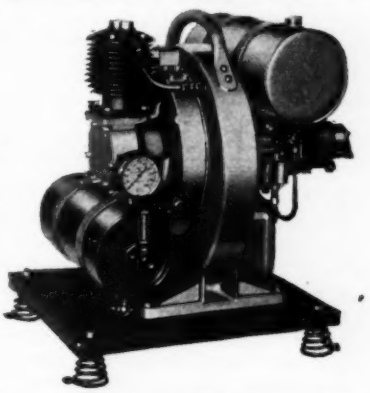
New Disc Grinder

The Van Dorn Electric Tool Company of Cleveland, Ohio, has just announced a new 7-inch Flex-Disc Grinder for smoothing welded and soldered joints and seams, cleaning dies, smoothing metal surfaces before painting and any other work requiring filing, sanding and emerying. It has ample power, and with the use of a felt-backed abrasive disc it will handle these operations quickly and satisfactorily.

Improvements made on the 7-inch Grinder include a removable pipe handle and right and left-hand bosses, making it possible to quickly and easily change the grinders for right or left-hand operation. In writing to the manufacturer for additional information, please mention *The Excavating Engineer.*

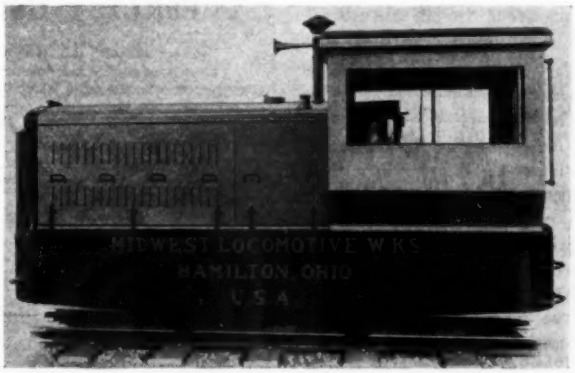
Portable Air Compressor

A portable air compressor of 200 lbs. pressure — capacity 6 cubic feet per minute—was recently placed on the market by the *Homelite Corporation, Port Chester, N. Y.* This new unit, according to the manufacturer, is ideal for operating pneumatic hammers for bricks, concrete, etc., spray painting, and other things which can be done with compressed air within the capacity of the unit. Its weight is 85 lbs. complete, with built-in Homelite 1½ h.p., air-cooled gasoline engine, Bosch waterproof magneto and float-type carburetor. It is ball-bearing throughout. In writing for additional information about this handy portable compressor, please mention *The Excavating Engineer.*



New Line of Gasoline Locomotives

The Midwest Locomotive Works of Hamilton, Ohio, has recently put into production a new line of gasoline-engine-driven haulage locomotives, which, when completed, will include eleven ratings from 4 to 25 tons. The entire line is thoroughly Timken equipped. Hercules engines are used on models up to 12 tons, while on the 16-ton and up, Climax engines furnish the power.



Many Midwest features of design and construction make these locomotives particularly suitable for any sort of industrial service, in quarries or clay pits, on construction or excavation projects, or in industrial plants generally, for haulage or as shifting engines on railroad service. Additional information can be requested by writing the manufacturer. Please mention this magazine.

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The Business Situation

EVERY so often the many divisions of business get out of step with one another and a period of adjustment is both desirable and necessary. We are now at a certain point in that cycle of adjustment, and it is highly desirable that we be neither over-optimistic nor over-pessimistic. Over-optimism will lead to too rapid increases in certain phases of business activity and will bring about corresponding reactions. Over-pessimism retards the natural improvement. Both extremes are to be frowned on; opinions should be based on a collection of carefully considered facts.

The question, receiving most attention today, seems to be "When is business going to get better?". One unusually reliable forecaster has stated that he expects July to be better than June, August better than July and September better than August. Let's see what visible facts there are now to warrant this forecast.

As a corrective business depression goes along, there comes a time when the decreases in business activity are at a slower rate than during the previous months. This slowing up of the rate of decrease is usually a forerunner of the appearance of increases in activity (and the rate of these increases is gradual at first and then quickens). Of late weeks there have been very definite evidences that the rate of business activity decrease is getting smaller and smaller.

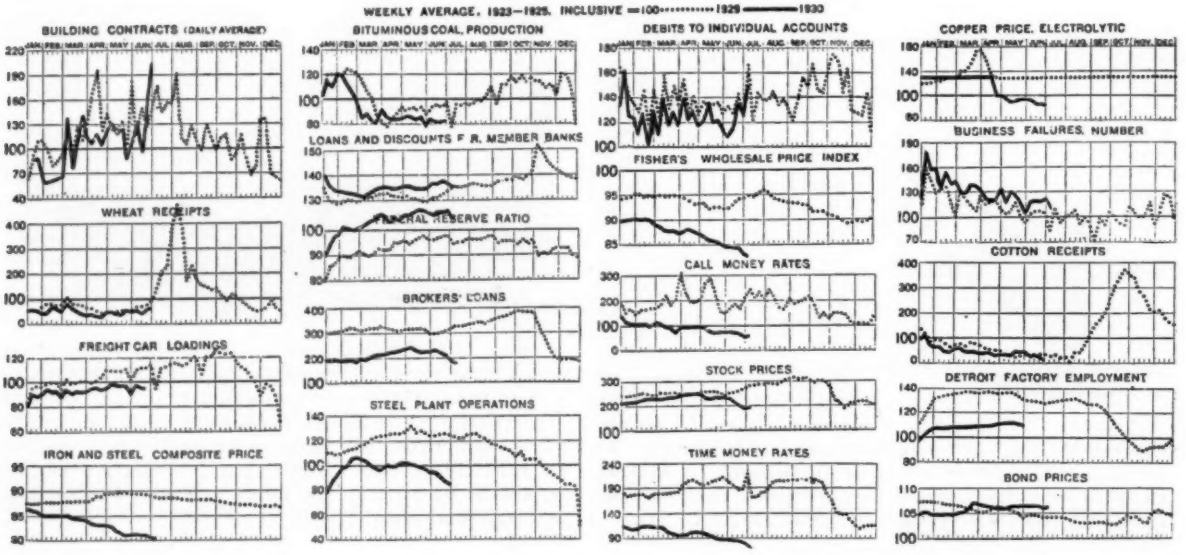
The volume of June construction was larger than any month since July 1929. June contracts let for new building and engineering works in the 37 states east of the Rocky Mountains amounted to $600,573,400 according to F. W. Dodge Corporation. The past month's record was substantially larger than the total of $457,416,000 for the previous month; showed a good gain over the total of $529,891,100 for June, 1929; and was the largest monthly total since July, 1929. For the first half of 1930 construction contracts aggregated $2,638,013,300. This was a decline of only 12½ per cent from the total of $3,015,546,800 for the corresponding period of 1929. At the end of May contracts for the year to date were 18 per cent behind last year.

For the sixth consecutive month public works and utilities were the most important of all classes. This construction type amounted to $251,915,800 or almost two-fifths of the value of all June awards. The following comprised the remainder: Residential buildings, $96,815,500; industrial buildings, $93,618,500; commercial buildings, $59,080,000; educational buildings, $48,918,800; hospitals and institutions, $19,675,300; religious and memorial buildings, $11,808,500; social and recreational buildings, $10,187,000; and public buildings, $8,554,000. Contemplated new work reported in June amounted to $763,216,100 compared with $634,073,400 for June 1929.

While it would not be logical to base too much on the construction record for June, the contemplated work reported in June is decidedly above that for a year ago and the trend is apparently upward. It should be remembered that construction activity is looked upon by many experienced observers as one of the most important if not *the* most important indicator of future business activity.

There is still another factor that deserves careful consideration, although great care must be used in selecting the source of the information. This factor

WEEKLY BUSINESS INDICATORS



cannot be put down in definite terms but it is one of the most important in the picture — we refer to the general feeling of business men, and mental attitude and their estimate of prospects for the future. This factor, at the present time, indicates that optimism prevails rather than pessimism, and it is not an excessive optimism such as caused the very recent stock market slump but rather an optimism tempered with careful consideration of all visible factors bearing on the problem.

Another interesting factor is that the average American has carried on during the past six or eight months very much as he carried on before. Statistics shows that he has bought more second-hand automobiles and fewer new cars than he did before November 1929, but on the other hand he has been using his car — consuming gasoline and rubber as he has before. He and his family have been wearing out their shoes, going to the movies and eating just about the way they did a year ago. But in the meantime production of so-called consumer goods has been cut down, with the result that the existing stocks of the manufacturers' products have been reduced and now give the picture a more favorable color.

Money for investment purposes is still available at much lower rates than have existed for many a month, and when Mr. Average Business Man begins to feel a little more optimistic than he does at the present moment, he will take advantage of this availability of funds.

The Care of Motor and Generator Insulation

(Continued from page 390.)

be applied. For severe acid, alkali, or moisture conditions, a black plastic baking varnish is best, while for conditions where oil or dust are present, insulating varnish should be used.

The insulating varnish may be sprayed or brushed on. For small stators or rotors, it is best to dip the windings into the insulating varnish, cleaning off the adjacent metal parts afterwards by using a solvent of the varnish. After applying the insulating varnish, the best results are obtained by baking for 6 to 7 hours at about 100 degrees centigrade. Experience with particular conditions of operation, or the condition of the insulation, may indicate the desirability of applying a second coat of the same varnish, followed again by 6 to 7 hours of baking at 100 degrees centigrade.

If the machine must be put back to service quickly, or if facilities are not available for baking, fairly good results will be obtained by applying one of the quick-drying black or clear insulating varnishes which dry in a few hours of ordinary room temperatures.

A further article on the care of electrical equipment will appear in an early issue.

Jerry Gwin Organization Turns Out Remarkable Records on Texas Road Job

(Continued from page 388.)

General Superintendent Sam Shepherd is in charge of the work on this operation and is assisted by Mr. Gwin's son. Operator Bob King has handled the levers of the Bucyrus-Erie. The records made place these men and the organization with them as topnotchers in the dirt-moving game. A word of credit is without doubt also due to the Gas + Air, which, says Mr. Shepherd, "is a better machine even than the B-2 steamer and that is going some."

"With Particular Satisfaction"

After breakfast on July 4th in his White House office President Hoover signed the Rivers and Harbors Bill "with particular satisfaction" in the presence of a group of congressmen responsible for putting through this legislation. Said President-Engineer Hoover: "It represents the final authorization of the engineering work . . . I have advocated for over five years . . . It is a long-view plan for the future. It will require many years to complete . . . We should approach the problem on sound engineering lines, completing the main trunk systems and gradually extending the work outward . . . The bill does not provide any increase in budget this year . . . In aggregate this inland waterway undertaking represents a larger project even than the Panama Canal. It will provide employment for thousands . . . and should bring great benefits to our farms and our industries."

Henry Miller Photo

President Hoover signs Rivers and Harbors Bill, providing $145,000,000 for dams, locks and channels. Standing Senator James Watson of Indiana; Representative W. E. Hull of Illinois; Senator Wesley L. Jones of Washington; Representative Nathan L. Strong of Pennsylvania; Representative John McDuffie of Alabama; Representative Albert E. Carter of California and Representative Francis D. Culkin of New York.

Among the principal items provided for in the bill are government acceptance and operation of Erie, Oswego and Illinois Waterway Canals when surrendered by New York and Illinois; dredging and maintaining a 24-foot channel in the Great Lakes with a 27-foot channel in the St. Lawrence River from Ogdensburg, New York, to Lake Ontario; digging a 9-foot channel up the Mississippi, from the mouth of the Illinois to Minneapolis and St. Paul with a 6-foot channel up the Missouri to Sioux City; and improving intercostal waterways to permit barge service along the coast.

A contractor reports the receipt of the following letter from an indignant citizen who lived nearby:

"Why is it that your steam shovel has to ding and dong and fizz and spit and bang and hiss and pant and grate and grind and puff and chug and hoot and toot and whistle and wheeze and jar and jerk and howl and snarl and groan and thump and boom and smash and jolt and screech and snort and slam and throb and roar and rattle and yell and smoke and smell and shriek and fume and crash all day long?"

This would seem to be a rather difficult question to answer off hand. — *Iowa Engineer.*

"Is your new man a good one-armed driver?"

"Aw, he's not that slow. He takes a taxi and uses both arms."

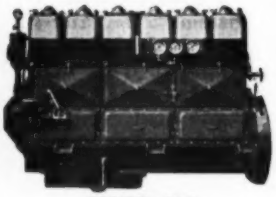
Can you handle tough jobs at a profit?

A Bucyrus-Erie D-2, powered with an Atlas Imperial Diesel, excavating for a logging road in Washington.

WHERE a gasoline engine normally stalls, under heavy load . . the Atlas Imperial Diesel digs-in and lugs. Uniquely, its lugging power (torque) increases under such conditions. Because, with its common rail fuel system, proper atomization is maintained constantly in the Atlas Imperial over the entire range of speeds.

10% to 15% greater yardage . . is the result. Besides . . you cut fuel costs from 75% to 90%. The Atlas Imperial Diesel burns only cheap, low-grade fuel oil, which costs ⅓ to ¼ as much as gasoline . . and it consumes ½ to ⅓ as much.

The 6-cylinder Atlas Imperial industrial full diesel.



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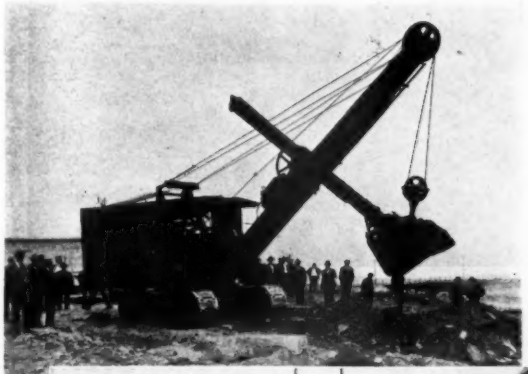
*Use*_____ *Name*_____ *Company*_____ *Address*_____

In writing to Atlas Imperial Diesel Engine Co. please use coupon or post card bound in the center of this number.

Full Steam Ahead for Chicago World's Fair

On the Lake Front, beside the Field Museum and Soldier Field, is being erected the first of the buildings which will house the 1933 World's Fair, Chicago's exposition to celebrate her century of progress. This is the administration building, which, it is reported by the *Chicago Daily Times,* will cost $300,000. The James B. French Company is the contractor for this structure, which is to be three stories high, 340 feet long, 120 feet wide, and will be planned for greatest possible salvage. The excavation is being handled by The Gerlach Company.



P and A Photo

The accompanying pictures show the Bucyrus-Erie Gas + Air which moved the first dipperful of dirt in this momentous undertaking. In the lower view attending the ceremonies incidental to moving the first dipperful are (left to right) President P. F. Sullivan of the Building Trades Council; Col. V. C. Ward, Vice-President of J. B. French Company; H. H. Sherry, Superintendent of Construction and W. E. Ramsey, Chief Engineer.

Operator Frank Lynch handles the Gas + Air for The Gerlach Company, although during the ceremonies he was "assisted" by "Operator" Rufus Dawes, brother of Hon. Chas. Dawes, Ambassador to Great Britain.

Mr. Cranwell, Please!

Operator J. E. Cranwell, recently with the Gillum Cooper Company, Cumberland, Kentucky, very kindly sent us photographs which we used in April. Mail directed to Operator Cranwell has been returned from both Cumberland and Pineville, Kentucky. We would like to know his present address so we may pay him for the photographs used. Can any reader help us?

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BIGGER DAYS WORK

Owen Buckets

No! It's Not Finicky About the Kind of Job!

Put an Owen Bucket in any kind of material, anywhere, and it's right at home . . . digging in as usual . . . capacity grabs every time . . . frequent overloads. And it stands up under out-of-the-ordinary, severe usage. It will do a bigger day's work *on any job* than any other bucket of the same weight and capacity . . . a guarantee that has been making good ever since Owen Buckets have been in use. No matter what the job or the conditions, if it's bucket work, an Owen will do it better.

THE OWEN BUCKET CO.

6026 Breakwater Ave.
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Cut Out This Man

You no longer need a "wagon skinner." Put his wages in your pocket. Western Crawler dump wagons no longer have to be "wound up." We have perfected a practical, automatic, entirely mechanical device for closing the doors after dumping. It is simplicity itself and acts instantly. The entire mechanism is mounted on the wagon and requires no special attachment on the tractor. A single trip-lever controls both dumping and closing. Your tractor driver can work that lever from his seat by means of a rope, or your dump boss can work it direct from the ground.

Order your new wagons equipped with this labor-saving device—or mount it on your Western Crawler wagons already in the field. Its use will release your "wagon skinner" for other work.

This whole welcome story is contained in Bulletin No. 30-JK just off the press.

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SHOTS FROM THE FIRING LINE

Coal Research Laboratory Assured for Carnegie Institute of Technology

The Buhl Foundation of Pittsburgh and six great American concerns have given a total of $425,000 over a five-year period for the establishment and maintenance of a laboratory for the fundamental research in coal and the products which may be obtained from it, according to Dr. Thomas S. Baker, President of Carnegie Institute of Technology. United States Steel Corporation, General Electric Company, Koppers Company, New York Edison Company, Standard Oil Company of New Jersey and Westinghouse Electric and Manufacturing Company are the organizations assisting the Buhl Foundation in making this work possible. Myron C. Taylor, Chairman of the Finance Committee of the United States Steel Corporation, is credited with doing much towards securing financial aid of the contributing corporations and has co-operated with Dr. Baker in outlining plans for the laboratory.

Coal Dealers Visit Mines

Recently some 70 coal dealers of Kansas, Missouri, Nebraska and Iowa visited coal mines of Kansas, Missouri, Oklahoma and Arkansas on an educational tour arranged by the Missouri Pacific with the co-operation of the mine operators.

In the Pittsburg, Kansas, district, the visitors, dressed in white coveralls furnished with the compliments of the Mackie Clemens Coal Company, inspected operations of that Company, the Cornell Coal Company, Pittsburg & Midway, Commercial Fuel Company, Hamilton Coal & Mercantile Company, Weir-Cherokee Coal Company, Mulberry Coal Company, Security Fuel Company, and the Central Coal & Coke Company.

At the Pittsburg & Midway strip pit, where luncheon was served, the visitors received one of the real thrills of the trip when 58 of them gathered in the 16-yard dipper of the giant Bucyrus-Erie stripper. "And there was room for twenty-five more of them, too," commented one witness.

Canada

Toronto Notes

Robert W. Campbell is operating a Bucyrus-Erie 100-B for the Innerkip Quarries at Innerkip, Ontario.

New England Notes

BY E. J. O'CONNOR

On the Mohawk Trail at Millers Falls, Massachusetts, **Kelleher Corporation** of Turners Falls, uses their Bucyrus-Erie B-2 on their work for improving this famous highway between Boston and the West. The steamer is shown above loading into an Autocar.

New York Notes

The Rusciano & De Blasio Corporation of New York City contracted the excavation on the new Public School 98 located on the Southwest corner of 173rd Street and Boston Road,

Bronx. The accompanying picture shows two of their 1¼-yard Bucyrus-Erie 41-B steamers on the 33,000 yards of dirt and Manhattan Schist a few days after the project was started.

New Jersey Notes

BY HOWARD BUTT

Hyde McFarlin Contracting Company of Madison recently started on their State Highway contract on Route 30, Section 8, extending from Clinton to the Musconetcong River. Excavation is estimated at 238,241 cubic yards earth and 12,500 cubic yards rock. Hyde McFarlin's Bucyrus-Erie Gas + Air is shown above starting on the job.

This is not a rock quarry but is a rock cut on New Jersey State Highway, Woodport Road, Section 2, between Dover and Franklin. This Bucyrus-Erie Type-B machine is owned by **Culp Company, Inc.,** of Dover.

SHOTS FROM THE FIRING LINE — Continued

Pennsylvania Notes.

The above illustration shows one of the mountain cuts on **O. P. Bell Construction Company's** highway job near Sunbury, Pennsylvania. According to F. B. Saylor, superintendent, the Bucyrus-Erie 1035, 1-yard gasoline shovel shown is averaging about 500 yards per 9½-hour shift on this job, with the record at 1000 cubic yards. Gasoline consumption is 40 to 45 gallons per day. Mr. Saylor, in discussing the work of this machine adds, "It is the best working straight gas machine we have seen on the market."

Physical Geography

Sam: "Judge, I waren't doin' nothin' but lookin' when she walks up the steps. Then all of a sudden she soaks me on the peninsula."

Judge: "What do you mean, peninsula?"

Sam: "Well, suh, just a long narrow neck stretching out to see."

The T. J. Foley Company has a string of Bucyrus-Eries on Pennsylvania Railroad work in this section. The accompanying illustration shows one of their 1030 clamshells operating at Johnstown, Pennsylvania. It was at this place on May 31, 1889, that the famous Johnstown flood swept away 3,000 buildings, did damage to the extent of about $10,000,000 and took over 3,000 lives. Another T. J. Foley 1030 is operating on Pennsylvania work at Johnstown, one at Coatesville and still another at Ravenna, Ohio.

Buffalo Notes

L. A. Harding Construction Corporation, engineers and contractors of prominence, recently announced the opening of offices in the Prudential Building, Buffalo, New York.

Only a Question of Degree

"My girl says she thinks I'm a wit."

"Well, she's half right."

THE *new*

WILLIAMS "Champion"

21 improvements give greater digging power to the New WILLIAMS "Champion" — and speed too.

DEFINITELY guaranteed to dig harder materials than any bucket built. You save dynamite—*"the dynamite is in the bucket."*

Write us, and we'll arrange a trial — make your own comparisons. *A real Champion welcomes competition!*

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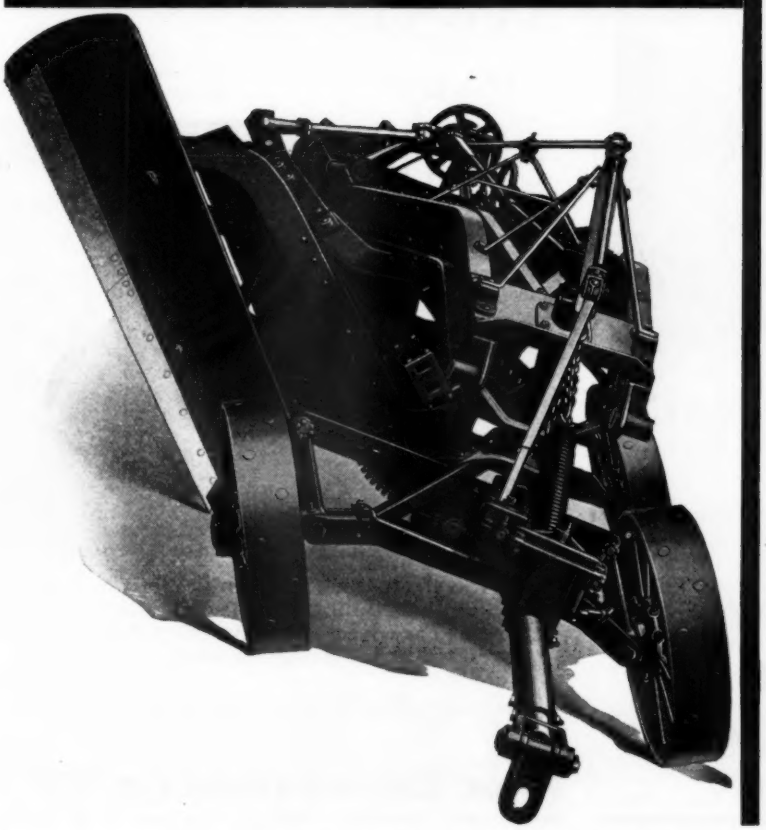
208

In writing to G. H. Williams Company please use post card bound in the center of this number.

Announcing the

"CATERPILLAR" SIXTY *Leaning Wheel* GRADER

Meeting Needs of Modern Roads



Wider grow the roads, deeper the ditches, better sloped the banks — Wider reaches the "Caterpillar" blade, deeper does it cut in the ditches, higher does it reach into the bank—

With these advantages comes the "Caterpillar" Sixty Leaning Wheel Grader.

Leaning Wheels.
3-Point Control to hold correct blade pitch advantage.
Ball and Roller Bearings on entire lift mechanism.
Bank Cutting Blade which cuts a 60 degree slope with a high reach of six feet six inches.
Compensating Spring Lift so mounted as to equalize tension on both ends of blade and exert uniform lifting force at any elevation of blade.
All Housed Gears Machine Cut.
Extensible Lift Links for greater reach.
Centralized Adjustment Controls.
60½-Inch One-Piece Structural Steel Circle.
Bronze Lift Gears, adjustable to six points of wear, running against machine-cut steel worm mounted on roller bearings.
One-Piece Carbon Steel Blade Beams riveted half way 'round the circle.
Four Vise-Like Screw Clamps that hold circle in their grip.
Nine-Inch Ship Channel Frame, weighing 28.6 pounds to the foot, reinforced.
42-Inch Lateral Side Shift.
Axle Spindles Drop Forged, heat-treated, chrome-nickel steel.
Tapered Roller Bearings in all wheels.
Tapered Cork Seals and Metal Guards to exclude dust from wheels.
Steel Wheels with Cast-In-Hub Spokes countersunk through tire.
Draft Direct to Blade . . . no draft applied to blade through frame.

Price
F. O. B. Minneapolis, Minnesota $1900

Caterpillar Tractor Co.

PEORIA, ILL. *and* SAN LEANDRO, CALIF., U.S.A.
Track-type Tractors : Combines : Road Machinery
(There is a "Caterpillar" Dealer Near You)

CATERPILLAR
REG. U.S. PAT. OFF.
TRACTOR

In writing to Caterpillar Tractor Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Virginia Notes

BY J. S. POTTS, JR.

Mr. Hall of **Hall & Mitchell** dropped in for a chat the other day and to tell us about his experience in moving their Bucyrus-Erie B-2 from Pendleton County, West Virginia, to Rockingham County, Virginia. The B-2 traveled this distance of 45 miles under its own power over extremely rugged mountain trails. In some instances the side hill trails were not wide enough to get the full bearing of the machine on the ground on the outside, or slope side, and the cats would have to hang over the steep drop five or six inches. Mr. Hall stated that if it had been possible to get a picture of the B-2 as it came over the ridge of the Shenandoah Mountain, it certainly would have been worth having. The trip was made in a little less than eight days, with apparently small wear and tear on the machine.

On the job in Pendleton County, West Virginia, recently completed, Hall and Mitchell also experienced some interesting handicaps. The location necessitated hauling coal by trucks for 57 miles, which, in this day and age, would appear to be a prohibitive situation. In spite of this fact, Hall and Mitchell purchased their B-2 steamer for this particular job and still feel confident that they made the right selection. In addition to the 57 miles haul on the coal, water had to be pumped several miles to the machine and there were many other difficulties to be overcome. Hall & Mitchell put the job through in nice shape and wound up the job with a neat profit on the books.

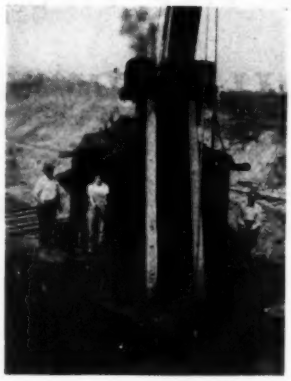
J. S. McCanless tells us that his Bucyrus-Erie Gas + Air is doing wonderful work on a State Highway project at Warrenton, Virginia.

"Why is it that a red-headed woman always marries a very meek man?"

"She doesn't. He just gets that way."

Southern Notes

BY W. W. WHORLEY



We understand that **Hy Bennett** has been handling some nice yardage for S. A. Lacy on the G. M. & N. R. R. The work between Union and Decatur is completed and the outfit has moved on to the north. In five months, on the section completed, they have moved 115,000 cubic yards. Sil Hamilton is overseer in charge of this work. The photos show that operator Hy has a fair assistant who can handle the levers of the Bucyrus-Erie too.

J. T. Moses writes from Palmersville, Tennessee, that he is handling a DA-2 shovel building highways for the H. C. Spinks Estate.

Rapid progress is being made in grading the new airport site near Woodlawn, a suburb of Birmingham, Alabama. **Nichols Brothers** of Atlanta, and **Paul Millsaps** have the contract for this grading.

J. B. Turner of Birmingham, Alabama, has been using his shovels on a subcontract at the airport job here, and reports that he landed a nice highway contract in the western part of Tennessee, and has moved his equipment to that job.

John Roberts, who has been handling shovels for A. J. Kreis on his work in Missouri, passed through the office recently. According to our latest information, John is handling

NACO SHOVEL CHAIN

will speed up operations in digging and handling any kind of material.

Naco links are identical in size and shape and will operate smoother, faster and with less wear on chain and sheaves.

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NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

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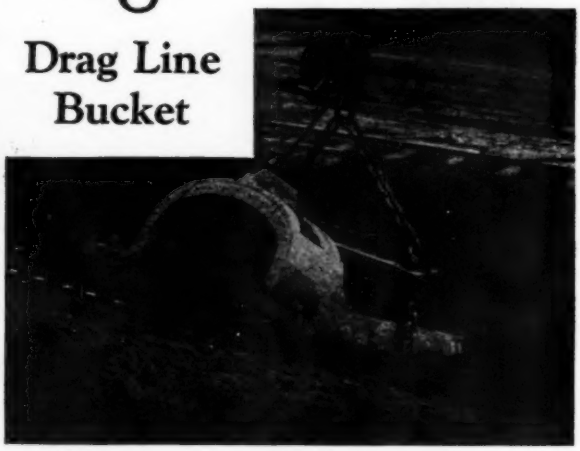
Page

Drag Line Bucket

On levee contract of the Canal Construction Co., Memphis, Tenn.



This load was picked up in the length of the bucket. Re-handling earth is often a problem, but this Page Bucket always gets a load without crowding the dump out ahead, and it gets it quick.

There is a Page Dragline Bucket for your job. Write

PAGE ENGINEERING CO. Clearing P. O. CHICAGO — ILL.

DRAG SHOVELS—DRAG LINES—BUCKETS—SLACK LINES—DIESEL ENGINES

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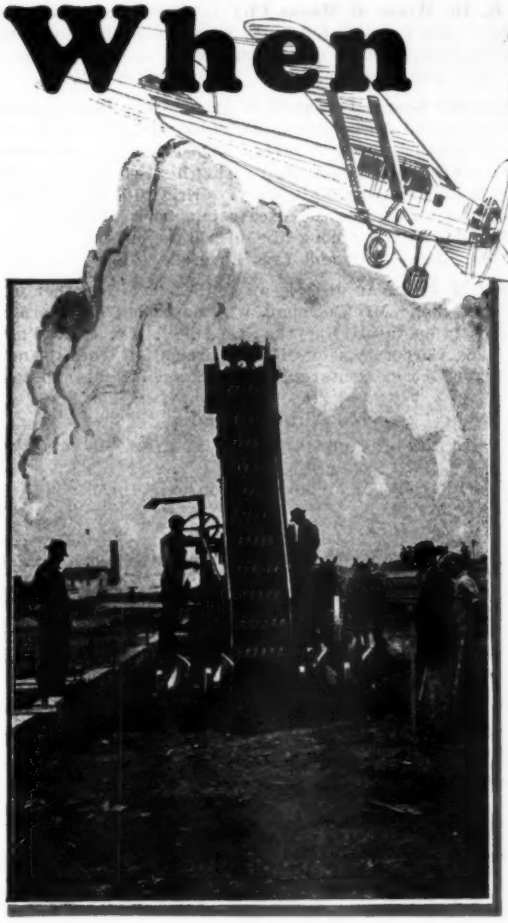
When you plan for Airport Grading—



Do as they did at the Curtiss Airport at Glenview, Ill., and skimming cuts and shallow excavation will cost you less. There the contractor used a Haiss Excavator for all the heavy grading, digging runways, hangar foundations, etc. They were even able to dig right through the burned debris and old foundations of a couple of farmhouses. In clay, sometimes hard and dry but often waterlogged, the machine averaged 500 yards per 9 hour day, loading dump wagons. *If you use trucks you'll work the machine faster—see Bulletin 629.*

GEORGE HAISS MANUFACTURING CO., INC.
144th St. and Park Ave., New York
Representatives in Principal Cities

Pick digging and propeller feeding

HAISS EXCAVATOR

"IT DIGS"

In writing to Geo. Haiss Mfg. Co., Inc., please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

a dragline for the Roquemore Gravel Company on their highway project.

Illinois Notes

List Construction Company is making good progress on the approach excavation for the new Santa Fe bridge over the Illinois River at Chillicothe, Illinois. This work involves about a million and a half yards of excavation on either side. On the west approach and fill three steam shovels and five drag-

lines are loading to narrow gauge cars, standard gauge cars, three-yard trucks, and seven-yard crawler wagons. Caterpillar tractors shown above furnish the motive power on the operation where these big Western wagons are used.

On the east approach a steam shovel and a dragline are busy loading to standard gauge cars. Night shift was started on this east side operation June 15.

K. K. De Weese of Mason City is operating a Bucyrus-Erie Gas + Air dragline for W. L. Simmons of that city. He tells us that the machine is doing fine work operating a three 8-hour shift and averaging about 1,000 yards a shift.

Contractor George Pontarelli is just getting nicely started on his good-sized sewer job at Arlington Heights, which requires excavating for and laying 55,000 feet of reinforced concrete sewer. Mr. Pontarelli is using his two Bucyrus-Erie 50-B's, his Bucyrus-Erie 30-B, Bucyrus-Erie 20-B and a Buckeye trench machine for the excavating, back filling with a Monarch bulldozer. Among the operators on this job are J. C. Jones, Jim Smith and Less Loverel.

Albert H. Bochman dropped in at the office the other day for a brief visit. Mr. Bochman, who has spent considerable time recently operating Bucyrus-Erie Diesels for J. G. White Engineering Corporation on Mexican irrigation work, is now working for George Pontarelli at Arlington Heights, Illinois.

No Alibi Needed

Wife (at the head of stairs, 2:00 a. m.): "Is that you, John?"

John (ominously): "Who were you expecting?"

Ouch!

She: "Go if you must, but you are leaving me without reason."

He: "I always leave things as I find them."

MEETING PLACE OF CAPITAL AND LABOR

THE KOENIG LABOR AGENCIES

Established 1875

ST. LOUIS
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HELP OF ALL KINDS FURNISHED FREE

"Think What This Means!"

All the force of the lever arm principle plus the ratio of the multiple rope principle in one bucket. This gives you more power than either alone.

The Less Line Overhauled the More Speed

By decreasing the height of the bucket we have cut down the amount of line to be overhauled, thereby increasing the speed of the bucket.

Guaranteed

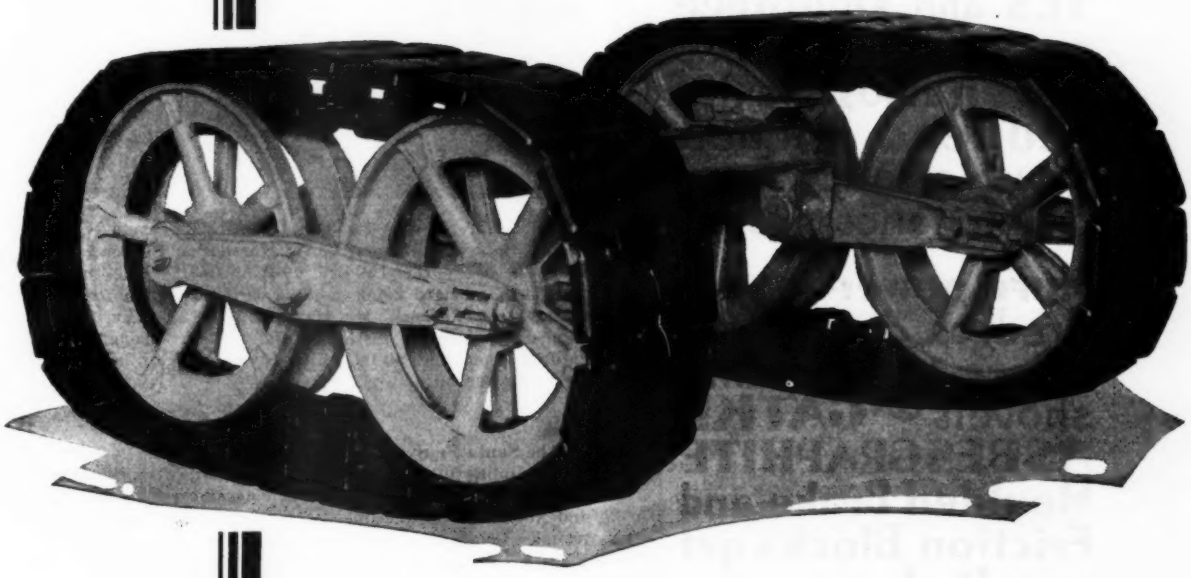
Erie Buckets are guaranteed to dig as well or better than any bucket of equal weight and parts of line. They are also guaranteed against defects due to material and workmanship during a period of 1 year. There is a type and size for every need. For more information

Send for the Complete Story

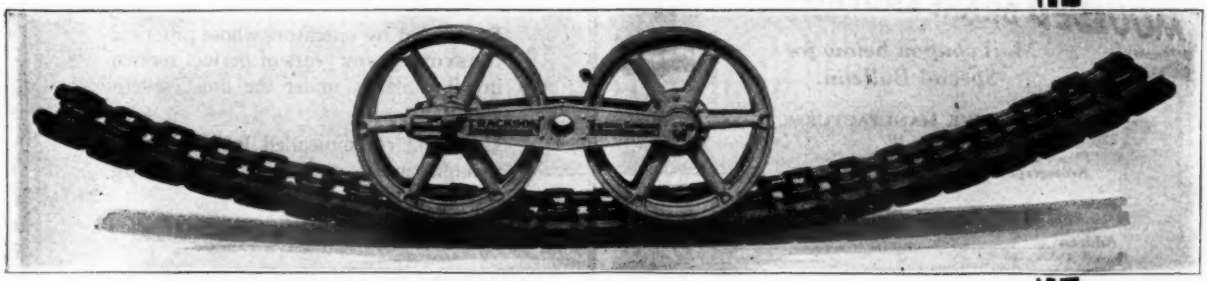
ERIE STEEL CONSTRUCTION CO.

ERIE — AGGREMETER PLANTS — STEEL STORAGE BINS — CLAMSHELL AND ELECTRIC BUCKETS — PENNA.

Built To Lick Your Hauling Problems



TRACKSON CRAWLER WHEELS are built to solve your crawler wheel problems. This is accomplished in Trackson design not so much by sheer weight as by properly proportioned design and functioning of the component parts. For example—the tension members for holding the shoes in rigid rail position are practically wear-proof. They are made of heavy drop forgings and function simply by moving to and fro within one another, with no turning or grinding action. Thus the original camber or arch, as shown below, is retained, resulting in easier running. Check Tracksons size for size and point for point. Note their liberal size, the removable shoe-bushings, the heavy drop-forged tension members, the take-up in the frame, the Timken Bearings and other details of their construction. Let us send you full particulars without obligation.



Trackson Company
500 CLINTON ST. MILWAUKEE, WIS.

In writing to Trackson Company please use post card bound in the center of this number.

"MORE POWER TO YOU!"

YES and **smoother** more even control... **fewer** adjustments, **reduced** friction troubles and **lower** maintenance costs!

More power to your dredges, drag-lines, hoists and steam-shovels — **GATKE ASBESGRAPHITE Moulded Brake and Friction Blocks get results!**

We supply sizes for all types of equipment.

Buy Direct from the Manufacturer

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Mail coupon below for Special Bulletin.

THOMAS L. GATKE, MANUFACTURER.
228 N. La Salle St., Chicago, Ill.
Please send us latest bulletin on Asbesgraphite Brake and Friction Blocks.

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SHOTS FROM THE FIRING LINE — Continued

St. Louis and Vicinity

BY C. F. BARTON

Subbing for Clinch-Mitchell Company on their C., R. I. and P. Railroad contract, **C. W. Marshall** of Kansas City is using the above Bucyrus-Erie 50-B steamer. This cut is 60 feet deep and hard going, but the 50-B is snorting away and taking it as it comes. Mr. Marshall is also using a 1¼-yard Osgood on some of his dirt cuts. Porter locomotives are hauling from the 50-B, while Plymouth gasoline dunkies serve the Osgood.

BY A. J. KOENIG

The Santa Fe System announces the projected construction of 380 miles of new railroad at a cost of approximately $15,000,000. The lines will be in colorado, Oklahoma, Texas and New Mexico. One line will be built from Amarillo to Las Animas, Colorado, a distance of 220 miles; a second line from Felts, Oklahoma, to Colmor, New Mexico; a third line from Spearman to Dumas, Texas.

GREDAG
REG. U.S. PAT. OFF.
LUBRICANTS

TAKE THE GRIND OUT OF GEARS—ADD LIFE TO BEARINGS

Demanded by operators whose practical tests cover many years of perfect service in all climates, under the most severe conditions.

Used and recommended by machinery manufacturers, on sound engineering advice and long experience.

Write for our book, "Industrial Lubrication".

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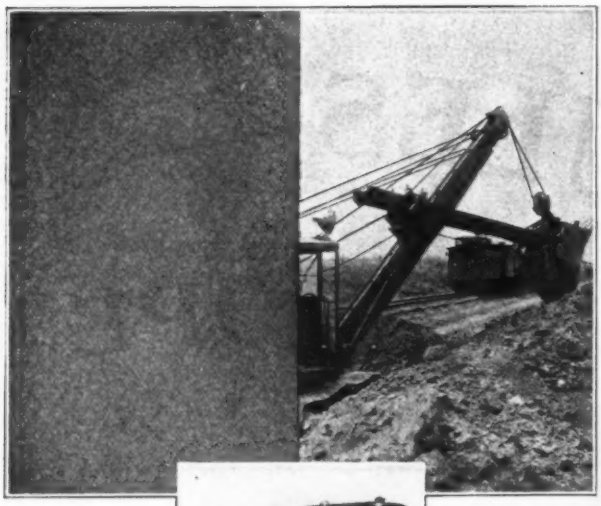
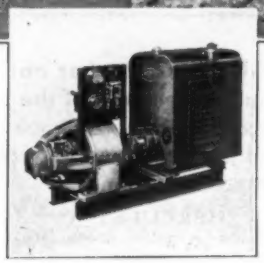
Unit of Union Carbide UCC *and Carbon Corporation*
NIAGARA FALLS, NEW YORK

"HERCULES"
REG. U.S. PAT. OFF.
RED-STRAND
WIRE ROPE
RESULTS are what count, and it is because of the service record of this wire rope that we feel justified in asking you to give it consideration.
While "HERCULES" (Red-Strand) Wire Rope is extra strong, it is also extremely tough and wear-resisting, and it is the correct combination of all of these vital qualities that accounts for its long life on present-day material handling equipment.
A heavy toll is taken every time a wire rope replacement is necessary. If you want to minimize this toll, give "HERCULES" a chance to prove its remarkable ability. Try it on your hardest work, for there is where its superiority is the most outstanding.
"HERCULES" (Red-Strand) Wire Rope is made in both Round Strand and Patent Flattened Strand constructions. These constructions are illustrated in our No. 37 Catalog, a copy of which we shall be glad to send to anyone interested.
A. LESCHEN & SONS ROPE CO.
ST. LOUIS
Made Only by A. Leschen & Sons Rope Co. Established 1857
5909 Kennerly Avenue
ST. LOUIS
New York Chicago Denver San Francisco

In writing to A. Leschen & Sons Rope Co. please use post card bound in the center of this number.





Stand Back, Night

Why let night rob you of hours when you need these hours most. Why let expensive construction equipment stand idle, running up your costs, when two or three shifts per day could make that equipment really profitable.

With the Novo Flud-Lite Lighting Unit, you can say: "Stand back, night—and let me work". You get almost daylight lighting for cranes, shovels, dredges and construction work of all kinds—at a cost of only a few cents per hour.

Compact—Fool-Proof

The Novo Flud-Lite Lighting Unit consists of a standard generator directly connected to a standard 1, 2 or 4 cylinder Novo anti-friction engine, with Timken Roller Bearings on crankshaft and drive shaft.

Lights are standard 110 volt. You can buy them at practically any electrical supply house.

And the Units are built in sizes ranging from 1¼ to 25 KW—to fit virtually any construction job. Write for complete details.

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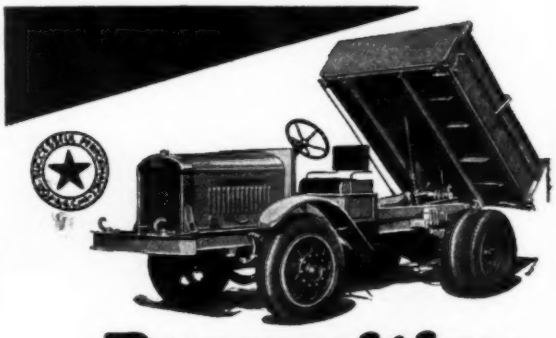
222 Porter Street, Lansing, Michigan
Clarence E. Bement, Vice-Pres. and Gen. Mgr.
Sold and Serviced by National Supply Co.

NOVO
Flud-Lite Lighting Units

SHOTS FROM THE FIRING LINE — Continued

The first unit will be built from Amarillo, Texas, to Boise City, Oklahoma, connecting Boise City with the line from Dodge City to Felts. Contract for this section has been let to Sharp & Fellows Contracting Co. of Los Angeles, California, who have sublet a big part of the grading as follows: Marsh Bros. & Gardiner of San Francisco, for heavy work north of Canadian River; Walter H. Denison of Cushman, Arkansas, to complete grade on 40 miles of line; Martin & Skousen of Los Angeles for part of construction between Amarillo and Canadian River; Allhands & Davis, Joplin, Missouri; A. A. Luck, Kansas City; T. M. Brown, Dodson, Missouri, 1,000,000 cubic yards of excavation and 3,000,000 cubic yards of embankment are envolved in the project.

Fruin-Colnon Contracting Company loaded the dirt from the basement excavation for the new St. Louis Globe-Democrat's Building to the Illinois Terminal Company's electrically-drawn Western dump cars. The St. Louis Globe-Democrat is St. Louis' largest newspaper. Loading with the Bucyrus-Erie E-2 Diesel, shown in the above illustration, averaged 65 twenty-yard cars per 8-hour shift.



Recognition

HUG Recognition in the Roadbuilding field has been gained through years of intensive effort in building specialized Roadbuilding Transportation Equipment.

Contractors and Roadbuilders recognize Hug performance as outstanding; they recognize the fact that Roadbuilding Transportation Equipment demands unusual stability, power and speed and that the Hug Roadbuilder is designed and built to meet roadbuilding conditions.

The constant addition of new Hug Owners and the addition of new units to present fleets is the best indication of Hug Recognition.

HUG
THE HUG CO., Highland, Illinois

Roebling

"Blue Center" Steel Wire Rope

By reason of the uniform high records obtained in the field, Roebling "Blue Center" Steel Wire Rope is the standard equipment of many of the largest manufacturers of excavating machinery.

Made in small acid open-hearth furnaces, the wire is painstakingly drawn and fabricated into the finished rope of a construction best adapted to the requirements of each size and type of shovel and excavating machine.

John A. Roebling's Sons Company
Trenton, N. J.

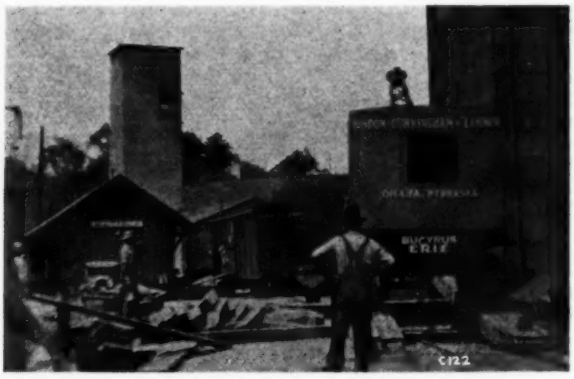
In writing to John A. Roebling's Sons Co. please use post card bound in the center of this number.

EASTON CARS
FOR EVERY PIT, MINE AND QUARRY
Easton Car and Construction Company
Easton, Penna.

SHOTS FROM THE FIRING LINE — Continued

Contracts have been let by the **Missouri State Highway Commission** for 86 road and bridge projects. Among the successful contractors were C. P. O'Reilly Construction Co., St. Louis; Skrainki Construction Co., St. Louis, Missouri; M. E. Gilloiz, Monett, Missouri; A. L. Cook, Ottawa, Kansas; Carlon Construction Co., St. Louis and F. T. Odell, Hannibal, Missouri.

J. H. Hays, 7019 Hancock Avenue, St. Louis, is looking for work for a fresno outfit with 15 head of stock.



Condon-Cunningham & Lemmon of Omaha, Nebraska, are handling a great many bridge projects for the Missouri State Highway Department. Here we see them unloading one of their Bucyrus-Erie 1020's preparatory to putting in a new Missouri highway bridge. These enterprising contractors have three 1020's which they are keeping busy on this type of work. At the present writing two of them are working on bridge contracts in St. Louis suburbs.

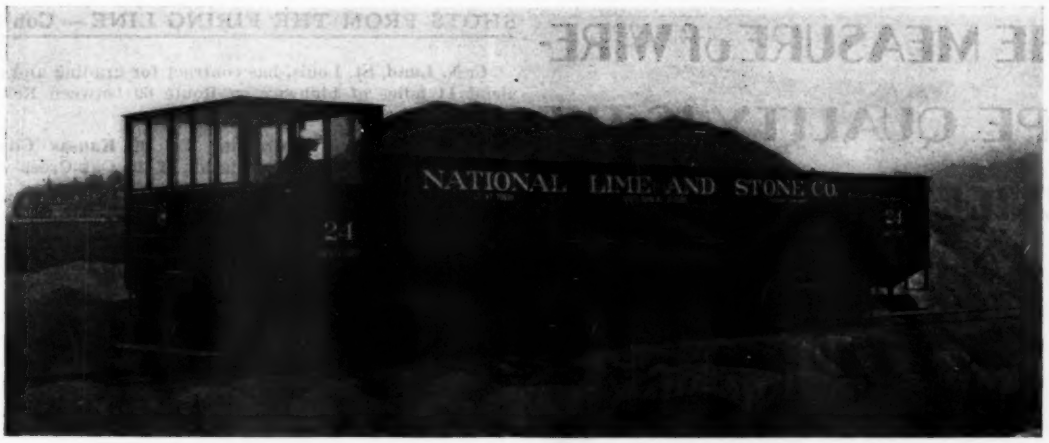
Asbestos
friction materials

which we supply for use on excavating machines are selected after careful inspection and testing — tests made in actual field service.

Take advantage of our efforts to find the best brake linings for your needs — they cost no more.

BUCYRUS-ERIE COMPANY
SPECIALTY DEPARTMENT
South Milwaukee, Wisconsin

BUCYRUS ERIE



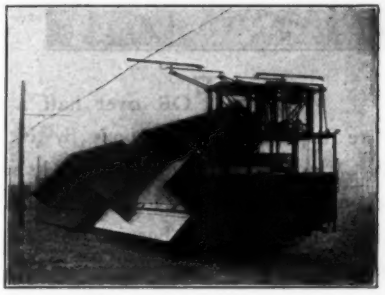
Differential Locomotive, gasoline driven. Capacity of dump body 24 cubic yards level full.

DIFFERENTIAL LOCOMOTIVES

"Carry a load on the Locomotive"

The Differential Locomotive consists of a self-propelled chassis on which a dump body is carried. The locomotives are designed and built in various sizes. The propulsion is by means of gasoline engine, gas-electric combination, Diesel-electric combination, or straight electric drive where the current is taken from trolley wire or third rail. These self-propelled units are designed and powered to draw suitable trailing loads.

Differential haulage systems are designed to fit your job. The use of the Differential Locomotive results in certain basic economies derived from using a payload for ballast. Nearly always substantial economies result throughout the entire list of operating expenses. Send for our bulletins covering various types of Differential Locomotives and Dump Cars—they describe the equipment fully and are well illustrated.



Differential Locomotive with straight electric drive. Locomotive has draw bar pull of 50,000 lbs.

THE DIFFERENTIAL STEEL CAR CO.

FINDLAY, OHIO

Differential Locomotive, gasoline driven, dumping load. Differential Locomotives are employed profitably in stock-piling stone, coal, ore, and in the disposal of waste and stripping around quarries, mines, industrial plants, etc.

In writing to The Differential Steel Car Co. please use post card bound in the center of this number.

THE MEASURE of WIRE-ROPE QUALITY IS THE SERVICE IT HAS RENDERED

Which wire rope to use on your equipment—which brand will give the longest and most economical service—may be best determined by past records of performance established under similar operating conditions. This and the reputation of the maker are of paramount importance.

FOR over half a century American Wire Rope, made exclusively by the American Steel & Wire Company, has demonstrated its superiority—proved beyond question that its tough, flexible and abrasion-resistant nature is the best insurance against breakdowns and costly delays.

Regardless of your particular problem, you will find an American Wire Rope exactly adapted to its economical solution. Consult our nearest branch office or distributor to get the right rope for your purpose.

AMERICAN
STEEL & WIRE COMPANY
WIRE ROPE

AMERICAN STEEL & WIRE COMPANY
SUBSIDIARY UNITED STATES STEEL CORPORATION

208 S. LaSalle St., Chicago — 30 Church St., New York

Other Sales Offices: Atlanta, Baltimore, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Dallas, Denver, Detroit, Kansas City, Memphis, Milwaukee, Minneapolis-St. Paul, Oklahoma City, Philadelphia, Pittsburgh, Salt Lake City, St. Louis, Wilkes-Barre, Worcester

Pacific Coast Distributors — Columbia Steel Company: San Francisco, Los Angeles, Portland, Seattle, Honolulu.

Export Distributors: United States Steel Products Co., 30 Church St., New York City.

SHOTS FROM THE FIRING LINE — Continued

C. N. Lund, St. Louis, has contract for grading and paving about 11 miles of highway on Route 60 between Rolla and Lebanon, Missouri.

J. W. McMurry Contracting Co. of Kansas City was awarded contract for the foundation of the Oak Creek viaduct in Kansas City.

The City of St. Louis and the Terminal Railroad will build, jointly, five approaches to the east end of the Municipal bridge over the Mississippi River as soon as plans have been approved. L. H. Bowen is City Engineer.

The Missouri-Kansas and Texas Railway Co. will build a bridge to replace the present bridge across the Missouri River at Boonville, Missouri. The plans call for a reinforced concrete, double-track bridge and will cost approximately $1,000,000.

Southwestern Notes

BY G. WITTE

Ben C. Lutz is operating a Bucyrus-Erie 50-B shovel for Middle Rio Grande Conservancy District at Albuquerque, New Mexico.

San Francisco and Vicinity

BY H. L. LIVINGSTON

The Matthews Construction Co. of Sacramento, California, were awarded the contract for grading 17.9 miles of highway in Shasta and Lassen Counties at a price of $278,251. This contract involves some 211,800 cubic yards of roadway excavation.

Granfield, Farrar & Carlin of San Francisco were low bidders for 1.8 miles of grading for Butte County, California. This contract has 245,600 cubic yards of roadway excavation.

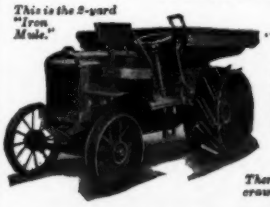
The Granite Construction Company of Watsonville have recently been awarded a contract for moving 165,000 cubic yards of highway excavation between Watsonville and Monterey. About 40,000 yards of this will be moved by their Gas + Air Bucyrus-Erie shovel, the balance being of such a nature that it will be moved by scrapers and Caterpillar tractors.

The City of Los Angeles has just voted favorably on a bond issue in the amount of $39,500,000 for extensions and improvements to the municipal water system. Part of this money will be used for purchasing water rights in the Owens Valley, which have been the subject of litigation for many years, and the balance will be expended to increase the size of the Los Angeles aqueduct and the capacity of the Chatsworth Reservoir. The enlargement of the Chatsworth Reservoir will put to work the two 50-B Bucyrus-Erie electric shovels that formerly made a very favorable record on the San Gabriel Dam.

Pacific Coast Aggregates, Inc., successors to Coast Rock & Gravel Company have changed their address to 700 Wells-Fargo Building, 85 Second Street, San Francisco, California.

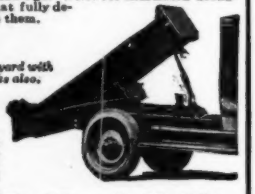
Put An "IRON MULE" on the Job

It Licks Trucks and Teams



This is the 2-yard "Iron Mule."

"IRON MULES" for years have made phenomenal profits for dirt-moving contractors. There are 2 sizes — the 4-yard with power hoist dump and crawler tracks, and the 2-yard with gravity dump. These sensational dirt haulers will get where trucks and teams can't go. Write for illustrated broadside that fully describes them.

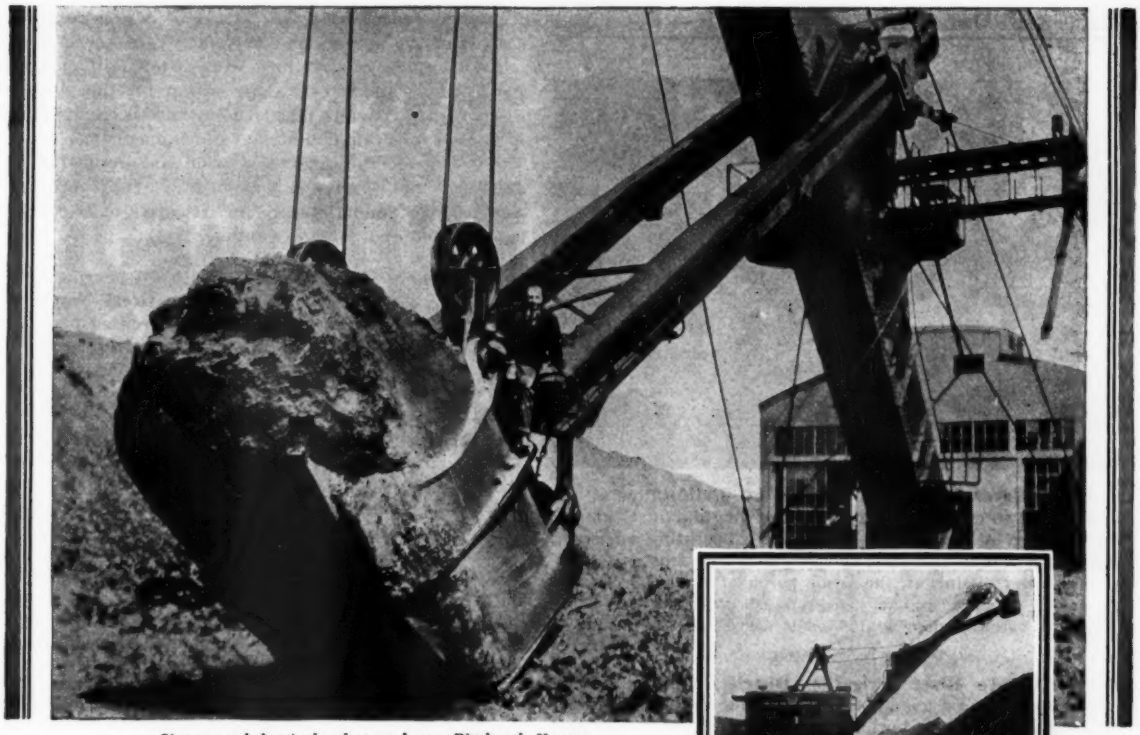


There's a 4-yard with crawler tracks also.

Dump Bodies Too

HUGHES-KEENAN Dump Bodies for all makes of light trucks are famous wherever dump bodies are used. Made in 1 and 1½ yard sizes, equipped with gravity dump, underbody hand hoist or power hoist. Write for descriptive folder.

THE HUGHES-KEENAN CO. Mansfield, Ohio



Sixteen-yard electric shovel at work near Pittsburgh, Kansas

Twelve-yard electric shovel in coal-stripping work near Oakland City, Indiana

Titanic Tools - *Electrically Driven*

In every size from 1 1/2 to 16 yards, wherever a shovel is needed, G-E Motorized Power, behind the bucket, efficiently and abundantly furnishes driving power for electric shovels. For detailed information, call your local General Electric representative, or address the General Electric Company, Schenectady, N. Y.

THESE 12- and 16-yard electric shovels, huge enough to be tools of giants, are so adjusted and powered within that they are virtually the extension of a man's hand at work.

Smoothly, rapidly furnishing power for swinging, thrusting, and hoisting, G-E Motorized Power gives day-after-day dependability in performance. Ward-Leonard control enables expert ease in maneuvering the big shovels.

Forced ventilation of the G-E motors on the 12- and 16-yard electric shovels effects economy, because the resultant power increase makes possible the use of a smaller motor. G-E drive is remarkable for low maintenance cost and long, useful life.

GENERAL ELECTRIC

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

200-336

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

In writing to General Electric Co. please use post card bound in the center of this number.

SHOTS FROM THE FIRING LINE — Continued

Glenn Royer and Frank Martin left Californina a few months ago to enter the employment of the Martin Engineering Company in Venezuela. Mr. Royer is operating a Ruston-Bucyrus machine and the above illustration shows "Slim" and his oiler sitting on the front porch of the machine. In Venezuela it is customary to stop all operations at three o'clock in the afternoon while tea is served by the pitman.

BY D. W. EVANS

The Mojave River Irrigation District, Victorville, San Bernardino County, has applied for permission to appropriate 30,000 acre feet of water per annum from Deep Creek and west fork of Mojave River in San Bernardino County. Work involves a storage dam 150 feet high and 450 feet long on top, hydraulic earth fill, together with 70,000 feet of canals and 13,000 feet of tunnels.

Martin Judge, Jr. & Co., San Francisco, have applied for permission to appropriate 250 cubic feet per second from Cache Creek in Lake County, work involving a concrete dam 160 feet high and 600 feet long on top, together with 300,000 lineal feet of concrete pipe. The estimated cost is $3,000,000. A storage reservoir in Indian Valley, and the construction of 90,000 feet of ditch 20 feet wide are estimated to cost $1,000,000, and permission is applied for to appropriate 175,000 acre feet per annum storage for irrigation of 50,000 acres of land in Yolo and Solano Counties.

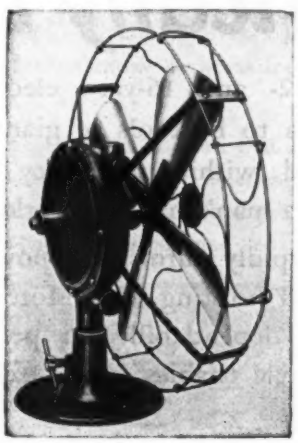
After years of sparring and months of hearing before the Interstate Commerce Commission, the **Great Northern Railway** and the **Western Pacific Railway** secured permission on June 23, 1930, to build 196 miles of connecting railroad from Klamath Falls, Oregon, to Bieber, California, this link creating a rail line from San Francisco to the North competing with the Southern Pacific. The two railroads will award contracts for the construction of this line about July 25, 1930. The 111 miles on the Western Pacific, it is estimated, will cost about $10,000,000 and involves a total of 4,260,000 yards, half of which is classed as rock. Among contractors who will probably bid on this work are: Utah Construction Co., San Francisco; W. A. Bechtel Co., San Francisco; Morrison-Knudsen Co., Boise, Idaho; A. Guthrie & Co., Portland, Oregon; Hauser Construction Co., Portland, Oregon. The 85 miles on the Great Northern is estimated to cost about $14,000,000, and involves 400,000 yards of rock excavation and 1,200,000 of common excavation.

Ambursen Dam Co., Alexander Building, San Francisco and New York, New York, have been commissioned to prepare plans for an Ambursen type dam for the Benbow Power Co. in connection with the Benbow Resort to be located on the south fork of the Eel River in Humboldt County, 4 miles from Garberville. Dam will be 300 feet long and 27 feet high.

Cool Comfort » »

Now, as the job nears completion, when each day's output is measured with eager eye, put your operator on a mild weather schedule with an 18"

Steam Fan



Provides steady stream of cooling air and you will "lick" both the heat of the boiler and the sun's hot rays beating down upon the roof. Requires but little steam and practically no attention while in service.

Write for prices—no obligation. **Bucyrus-Erie Company, Specialty Department, South Milwaukee, Wisconsin.**

BUCYRUS ERIE

WHAT IS THIS DEVICE WE CALL CHAIN?

The dictionary describes chain as a "series of links or rings, usually of metal, joined together." An accurate description—as far as it goes, but wholly inadequate when applied to TAYLOR-MADE Chain.

In the first place, TAYLOR-MADE Chain is *more* than just a "series of links joined together." It is a series of links made of a *special grade* of triple rerolled refined iron, welded by skilled workmen with years of experience behind them.

In the second place, more than just a "series of links joined together"—TAYLOR-MADE Chain serves hundreds of useful purposes. It is an invaluable tool for hoisting, for excavating—in fact wherever a strong, flexible joining force is needed.

CHAIN THE STRONG LINK OF INDUSTRY THE CHAIN INSTITUTE

S. G. TAYLOR CHAIN COMPANY

P. O. Box 1297-B Hammond, Ind.

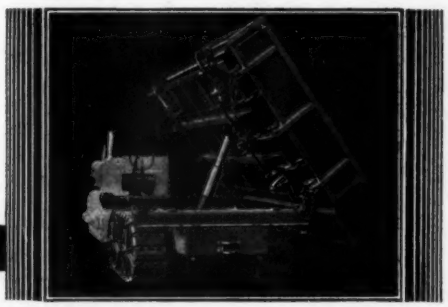
Not one pound of *Surplus Weight*

TRUE—Atheys have tremendous strength and unusual capacities—but its all because of *refined* strength—not plain weight. Strength is put where needed. Rigid frame prevents body twisting while dumping.... special heat treated reinforced frame has twice the strength given ordinary frames of greater weight .... special alloy heat treated tracks have three times the resistance to abrasive wear of carbon steel usually used .... pump works only during dumping operation .... high truss track construction reduces bearing pressures 70% to 80%, doubling track pin life .... with this highly engineered foundation, you can rebuild Atheys three times at less cost than the original cost of ordinary equipment, plus the added maintenance costs.

No unit can be built stronger than Athey, regardless of weight. Atheys carry pay loads, not tons of excess weight. This means substantial savings in gasoline, oil and tractor maintenance items. Light weight and light running qualities permit high speed operation of entire unit .... all of which translates itself into low maintenance and low operating costs .... lower costs per yard—or higher net profits to you.... If dirt moving costs mean anything to you, get all the facts on Athey 3-Way Dump Trailer. Write today.

ATHEY TRUSS WHEEL CO.
130 North Wells Street, Chicago, U.S.A.
Cable Address: "Trusswheel", Chicago
The Baldwin Locomotive Works, Foreign Representatives, Philadelphia, Pa.

You haul Pay Loads with ATHEYS *not dead metal*



ATHEYS DUMP TO RIGHT-LEFT AND REAR

ATHEY TRUSS WHEEL WAGON

IT BRIDGES THE SOFT SPOTS

In writing to Athey Truss Wheel Co. please use post card bound in the center of this number.

JOHNSTON IN SIAM

It is often said that the proof of the pudding lies in the eating. Then, the proof of a good boiler is in the use, today, tomorrow and year after year.

These JOHNSTON Boilers specially built for contracting purposes are proving their worthiness in all parts of the world.

JOHNSTON BROTHERS, Inc.
FERRYSBURG, MICH.

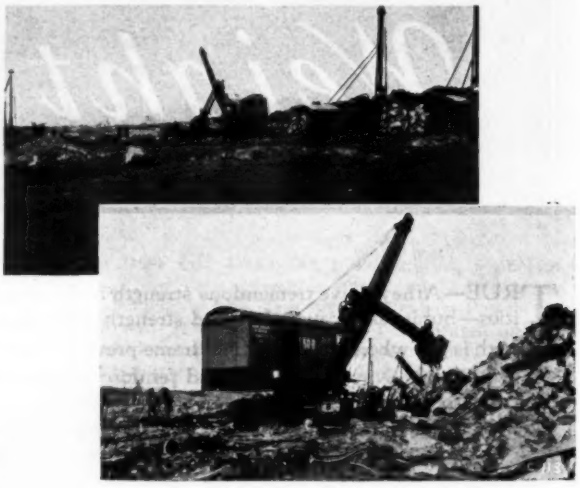
INVESTMENT OPPORTUNITY
For the concern that seeks to bring down excavating costs, a Hayward Bucket is a wise investment. Address the Hayward Co., 52-54 Church St., New York, N. Y.
ward Buckets

Important Step Toward St. Lawrence Waterway

(Continued from page 383.)

tail tower also on cats and propelled by a gasoline engine. A cableway, used to handle a 10-cubic-yard bucket, is strung between the two towers. The towers will operate on spans up to 800 feet.

The tail-race formation is composed of a silica sandstone rock, and the excavation for the tail-race, power house and bulkhead amounts to about one and one-half million cubic yards. The main part of the tail-race excavation is being drilled by 10 electric, traction, well drills using 6-inch bits. The well drill holes vary in depth from 38 to 60 feet. In order not to damage the power house



Excavating the tail race. Note the blast hole drills putting down hole in the upper view. Below, the Bucyrus-Erie 50-B high-lift shovel with 1¾-yard dipper, 35-foot boom and 19-foot sticks is cleaning up some of the rock excavation.

foundations the drilling in this neighborhood is being done with jackhammer drills. The equipment used in moving the broken rock is one 8-cubic-yard high lift, electric shovel, which will load cars on the original ground level so that trains will not have to come down into the excavation. One 1¾-yard electric shovel is also being

Buckeye

TRENCH EXCAVATORS AND BACKFILLER-CRANES

The Buckeye Traction Ditcher Co.
Findlay, Ohio

used in the tail-race excavation for cleaning up such portions of the work which it would not be economical to handle with a large shovel. The rock taken from this tail-race, as above indicated, will be used for rip-rap, and will also be sent to the crusher plant to be used in concrete and as track ballast.

8-cubic-yard Marion electric excavating the Tail Race of the Beauharnois Power House.

The main part of the excavation described was begun in April and May of this year and is scheduled for completion by October 1932.

Members of the Beauharnois Construction Company staff include: D. F. Noyes, Superintendent; M. V. Sauer, Hydraulic Engineer; B. K. Boulton, Electrical Engineer; R. G. Watson, Mechanical Engineer; J. A. Knight, Designing Engineer.

1. Faster drilling
2. Reduced operating costs
3. Fewer repairs
4. Longer life
5. Easier moving
6. Rugged frame (wood or steel)
7. All types of power

. . . *reasons why* there are more Loomis "Clipper" Blast Hole Drills in use than any other make.

Either round wheel or crawler type, welded steel or wood frame is furnished; all steel machine if specified.

THE LOOMIS MACHINE COMPANY
(Established 1842)
K Street, TIFFIN, OHIO

Cross your fingers *like this*

Note the pressure on your forefinger. This illustrates *internal stress* in ordinary wire rope, in which the strands and wires are held in their helical form by force.

Now do this

Note how lightly and relaxed your fingers lie against each other. No pressure or straightening-out strain. This illustrates the difference between ordinary wire rope and Tru-Lay *Preformed* Wire Rope.

In Tru-Lay, strands and wires *lie free and relaxed*

Wires and strands are helically shaped before they are laid together. Each wire and strand lies naturally in position—there is no strain or torsional stress to cause internal wear. Each wire and strand lies relaxed and free, ready to take its share of the load and wear, free from fatigue stresses.

which means longer life

Tru-Lay *Preformed* Wire Rope, because it is free from inherent torsional stresses, adjusts itself perfectly on drums or sheaves. Because of its greater flexibility and "bendability" Tru-Lay can be spooled on smaller diameter drums with less fatiguing action.

Let us send complete information and a short length of Tru-Lay *Preformed* Wire Rope so you can examine its *preformed* construction. Address:

AMERICAN CABLE COMPANY, *Inc.*
New York Central Bldg., 230 Park Ave., New York, N.Y.
An Associate Company of the American Chain Company, *Inc.*

District Offices:
Chicago, Detroit, Philadelphia, Pittsburgh, Tulsa, San Francisco
Canadian Licensed Manufacturers:
Dominion Wire Rope Company, *Limited*, Montreal; Canada Wire & Cable Company, *Limited*, Toronto

PREFORMED WIRE ROPE
TRU-LAY
REG. U.S. PAT. OFF.

POSITIONS WANTED

Space under this heading is available at $5.50 per inch or fraction thereof.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Shovel Operator

14 years' experience on Bucyrus-Erie 30-B, D-2, 50-B and 80-B steam, Diesel, gas and electric on canal, highway and levee work. Willing to go anywhere in U. S. or Mexico. Can do own repair work and furnish reliable references. Present location, Utah. Box 2801.

Dragline and Shovel Operator

20 years' experience on shovels and draglines on all types of clay work. Prefer operating Erie steam machine anywhere in U. S. A. Can do own repair work and furnish reliable references. Present location, Virginia. Box 2802.

Crane and Shovel Operator

8 years' experience on cranes and shovels on highway and building work. Prefer operating steam or gas shovel or crane anywhere in U. S. Can do own repair work and furnish reliable references. Present location, Tennessee. Box 2803.

Shovel Operator

10 years' experience on Steam and Gas shovels on all types of excavation. Prefer position as operator anywhere in U. S. Can do own repair work and furnish reliable references. Present location, Ohio. Box 2804.

Shovel Operator

12 years' experience on shovels and steam rigs. Two years on gas clamshells, draglines and shovels. Prefer 50-B or any standard machine. Willing to go anywhere. Can do own repair work and furnish excellent references. Present location Michigan. Box 2810.

Shovel Operator

14 years' experience on steam and gasoline Marion, Northwest, and Thew shovels, draglines and cranes in highway, railroad grading and quarries. Prefer Northwest or Bucyrus-Erie — anywhere in U. S. or Canada. Can do own repair work and all overhauling. Single and sober. Box 2811.

Shovel Operator

Experienced on Bucyrus-Erie 20-B, 30-B and 50-B Diesel machines. Willing to go anywhere in U. S. Can do own repair work and furnish reliable references. Present location, Florida. Box 2806.

Crane and Shovel Operator

12 years' experience on shovels and cranes, steam-powered, on railroad work. Willing to go anywhere in U. S. Can do own repair work and furnish reliable references. Present location, West Virginia. Box 2807.

Shovel Operator

15 years' experience on Bucyrus 41-B, 50-B, Marion, Link-Belt, Northwest, P. & H., Browning, O. & S., Koehring steam, electric, and gas rigs in highway and railroad grading, sewer building, and material handling. Prefer running Bucyrus 50-B any power as pile driver, steel setter or clamshell. Can do own repair work and complete overhauling. Best of references furnished. Present location, Indiana. Box 2809.

Shovel Operator

18 years' experience on Bucyrus 35-B, 50-B, 80-B, 175-B, 225-B and 320-B, Marion 36 and 360, Osgood 29, steamers in highway and railroad work. Can also operate clamshell or pile driver. Can do own repair work and furnish reliable references. Present location Indiana. Box 2808.

Crane Operator

10 years' experience on Erie, Monighan, Link-Belt, and P. & H. machines. Willing to go anywhere. Can do own repair work and furnish reliable references. Present location, Missouri. Box 2805.

Dragline and Shovel Operator

9 years' experience on Bucyrus-Erie, Link-Belt, Thew and P. & H. machines, steam and gasoline-powered, on highway, railroad, quarry and basement excavation. Prefer working near New York state. Can do own repair work and furnish reliable references. Present location, New York state. Box 2715.

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Space under this heading is available at the following rates, payable in advance of publication:

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The price per inch is based on total space used — multiply ad space by number of continuous insertions.

Address all box numbers c/o The Excavating Engineer at South Milwaukee, Wisconsin

Small Shovels
Under 2 yards

ONE 36 MARION STEAM SHOVEL No. 4758. Caterpillar with Crane and Dragline equipment. Immediate delivery. Price and terms on application. Box 95-SS.

TWO TYPE "B" ERIE STEAM MACHINES, mounted on "cats," ¾-cubic-yard dippers, shop numbers 2300 and 2301, 19-foot booms and 16-foot dipper handles. Box 83-SS.

18-B BUCYRUS SHOVEL ATTACHMENT. ⅝-cubic-yard dipper, boom with machinery. Priced right, f. o. b. Lexington, Kentucky. Box 58-SS.

ONE ERIE HIGH LIFT STEAM SHOVEL, on "cats," 19-foot 8-inch boom, 16-foot dipper stick, new manganese front inserted tooth dipper, machine entirely overhauled, boiler reflued, late 1928, after which machine operated only about two weeks. Will sell at a bargain. Box 26-SS.

MARION MODEL 32, shop No. 5459, mounted on "cats," steam-powered, 1¼-cubic-yard dipper, 24-foot boom, 17-foot 6-inch dipper handles. Box 82-SS.

TYPE B-2 ERIE STEAM MACHINE mounted on "cats." Box 84-SS.

RECONDITIONED TYPE B SHOVEL, shop number approximately 3100, caterpillar mounted, ¾-cubic-yard inserted tooth dipper, 19-foot 9-inch boom, 16-foot 4-inch dipper handle, power boom hoist. Guaranteed. Will rent with option to purchase. Price on application. Box 40-SS.

TYPE B ERIE HIGH LIFT SHOVEL, shop number 3175, mounted on spur gear caterpillars, equipped with 19-foot 9-inch boom, 16-foot dipper handle, ¾-cubic-yard dipper, boom hoist, two-speed travel mechanism. Box 87-SS.

WANTED
SHOVEL CRAWLER BASE

FOR TYPE O ¾-YARD THEW SHOVEL, or would consider whole machine if top is suitable for spares. State location, condition and price, etc. Box 94-SS.

BUCYRUS-ERIE GAS + AIR SHOVEL, shop number approximately 9800, equipped with 22-foot 6-inch boom, 16-foot dipper handle, one-cubic-yard inserted tooth dipper, power boom hoist. Mounted on single shaft caterpillar-type mounting. Has moved only 40,000 yards of material. Located vicinity of Poughkeepsie, New York. Box 96-SS.

REBUILT GA-2 ERIE SHOVEL mounted on new single shaft caterpillar, 1-cubic-yard inserted tooth dipper, 22-foot 6-inch boom, 16-foot dipper handle, starter. Carries guarantee of new machine. Box 43-SS.

TYPE "A" ERIE STEAM SHOVEL, shop number about 1900, caterpillar mounted, 16-foot boom, 14-foot dipper handle, ⅝-cubic-yard dipper, boom hoist. In first-class condition. Located Chicago vicinity. Priced to sell. Box 69-SS.

OSGOOD STEAM SHOVEL, 1¼-cubic-yard dipper, caterpillar mounted. Shop number 1397, priced f. o. b. cars, Summittville, Tennessee. Box 86-SS.

BUCYRUS 30-B DIESEL COMBINATION SHOVEL — DRAGLINE — CLAMSHELL CRANE. 25-foot 9-inch shovel boom, 14-foot dipper handles, 1-cubic-yard cast front dipper. Clamshell-dragline-crane boom 40-foot channel, engine Atlas 3-cylinder, 55 h.p. Completely rebuilt, carries same guarantee as new machine. Available immediate shipment. Box 35-SS.